PARACELSUS

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THEOPHRASTUS BOMBASTUS VON HOHENHEIM

CALLED

PARACELSUS

HIS PERSONALITY AND INFLUENCE AS PHYSICIAN, CHEMIST AND REFORMER

BY

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TO THE BUILDERS OF THE SCIENCES OF CHEMISTRY AND MEDICINE WHOSE LABORS HAVE CONTRIBUTED TO THE REALIZATION OF THE DREAM OF PARACELSUS OF A SCIENCE FOUNDED NOT UPON DOGMA BUT UPON OBSERVATION AND EXPERIMENT, THIS STUDY IS DEDICATED.

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PREFACE.

THE following attempt at a characterization of Paracelsus and of his place in the history of science owes its inception to difficulties met in connection with the preparation of a course upon the early history of chemistry. Important discrepancies as to facts and violently differing judgments as to his influence and value, especially in English sources, seemed to make desirable a new attempt at interpretation. Material for this exists in the studies published during the past few decades by a number of scholars, whose labors have resulted in seriously modifying century-old judgments by the discovery of new evidence and by tracing down and correcting earlier errors.

Especially may be noted among the more recent Paracelsus students, Karl Aberle, John Ferguson, Karl Sudhoff, Franz Strunz, Raymund Netzhammer, R. J. Hartmann, H. Kopp, Heinrich Häser, Max Neuburger, Julius Pagel, Friedrich Mook and Anna M. Stoddart, though many others have contributed.

Studies for this book were begun more than a decade ago, and the manuscript was completed before the outbreak of the Great War. Publication was then postponed, and has been further delayed by the illness and death of Dr. Paul Carus, editor of *The Open Court* and *The Monist*, to whose interest and cordial cooperation in the planning of the publication the author is deeply indebted.

In compiling this work copious literal translations of the

writings of Paracelsus have been introduced, in the belief that no other treatment could so well convey some impression of the personality of the Swiss physician and the character of his appeal to his contemporaries and followers. The texts used for that purpose are: the Strassburg folio edition of 1616 (the third impression of Huser's original edition of 1589-90); the *Chirurgische Bücher und Schrifften*, Strassburg, 1618; and extracts from Paracelsus manuscripts as contained in Dr. Karl Sudhoff's monumental bibliography *Versuch einer Kritik der Echtheit der Paracelsischen Schriften*, 2 vols., Berlin, 1894-99.

The author takes occasion to express his gratitude to Professor Karl Rendtorff of Stanford University for much valuable assistance in the interpretation of the Early German texts, and to Professor J. S. P. Tatlock, also of the Stanford faculty, for his helpful and clarifying suggestions in the same connection. For the accuracy of the translations, as for their imperfections, the author alone is responsible.

J. M. S.

Stanford University, March 15, 1920.

INTRODUCTORY.

THE period of the late Renaissance and the Protestant Reformation is from many points of view of great human interest. Many influences were active in bringing about a readaptation of the spirit of man to changing conditions, a readjustment all the more violent as the bonds of tradition and authority had so long held the minds of men in the fetters of accepted dogmas. In art, literature, philosophy, politics, theology, many strong and bold thinkers arose. Men were becoming aroused to a new consciousness of their powers. Reacting from the medieval mental slavery, the spirit of man became more independent and self-assertive.

The domain of thought latest to share in this impetus was the field of natural science. After many hundreds of years since Greek and Roman science and art had been overthrown by barbarian conquests, during which period there existed comparative intellectual sterility and all learning was confined to the clerical orders and all independent thought had been jealously censored by the medieval Church, there had gradually developed both within and without the Church a restless movement toward question and criticism of accepted dogmas and au-

thorities. There arose an ambition to reinvestigate and to test by reason the basis of knowledge and of faith. Naturally the beginnings of this movement took place in those domains of thought most clearly related to the scholarly thought of the time—in theology and in speculative philosophy. So long, however, as this movement was limited to the clerical classes, and its expression was confined to the medium of manuscripts in scholastic Latin, no great popular participation could occur, and the authority of the Church could in great measure control any infections of thought considered dangerously in conflict with accepted beliefs.

Nevertheless, the tendency toward independent thought could not be extinguished. It found outlet at first in other directions, in the revival of interest in the art and literature of the ancients, in the bursting forth of new forms of art, in painting, sculpture, architecture and literature.

Two great influences had arisen during the fifteenth century to accelerate the intellectual awakening of Europe, a remarkable development of the universities, both in number and scope of teaching, and the invention of printing by movable metal types.

Many of the older universities had been founded in the thirteenth and fourteenth centuries or even earlier. Among the more prominent of these were, in Italy, Naples, Salerno, Bologna, Padua, Pisa; in Spain, Valladolid, Salamanca, Seville; in France, Paris, Montpellier, Toulouse; in England, Oxford

and Cambridge; in Bohemia, Prague; in Poland, Cracow; in Austria, Vienna; in Germany, Heidelberg, Cologne, Erfurt.

In the fifteenth century there were founded a large number of universities, particularly in the German Empire, as Würzburg (1403), Leipsic (1409), Rostock (1419), Louvain (1426), Greifswald (1456), Lüneburg (1471), Munich (1472), Ingolstadt (1472), Mainz (1477), Tübingen (1477), Budapest (1465), Upsala (1476), Copenhagen (1478). In France also several new universities were established, as Aix in Provence (1409), Poitiers (1431), Caen (1437), Bordeaux (1441) and others. In the earlier half of the sixteenth century were established, e. g., Wittenberg (1502), Breslau (1505), Frankfort-on-the-Oder (1506), Marburg (1527), Königsberg (1544), Jena (1557).

The development of the universities and the extension of printing both served to bring to a larger constituency the ideas of representative thinkers of the time.

Many other events were operative in breaking down the barriers of traditional conservatism. The discovery of America, and the exploitation of its wealth by Cortez and Pizarro, the discovery of the ocean route to India (1498), were opening new centers and currents of trade and commerce and new sources of wealth. The power of Spain was growing, the great German Empire losing coherency. The prestige of the Pope in temporal affairs was disputed. As the power of the emperor waned,

the influence of the German princes increased. The German cities were gaining, the feudal barons diminishing, in authority, while the mercantile and middle classes were increasing in wealth and influence. The printing and circulation of the Bible also occasioned more wide-spread criticism of current theological thought, and was largely influential in the development of schisms, which eventually resulted in the Protestant Reformation.

Theophrastus von Hohenheim, or Paracelsus[1] as he came to be generally called, was a true child of this period. He illustrates at once its independence, its self-confidence, its boldness of thought as well as its confusion of old and new tendencies, its dependence upon tradition and its struggle to free itself from that bondage. The lifetime of Paracelsus (1493-1541) fell in a period of the most fertile intellectual activity of the Renaissance. We may realize this if we recall that the span of his life touched the lifetimes of Michelangelo, Machiavelli, Leonardo da Vinci, Ariosto, Rafael, Columbus, Copernicus, Thomas More, Erasmus, Luther, Melanchthon, Rabelais, Vesalius, Cardanus, and others whom these names will suggest, and who have left a distinct impress upon the development of civilization. Paracelsus was born in the year following the discovery of America, an event which with its con-

[1] The name Paracelsus was adopted by Hohenheim in accordance with a common custom of writers of the time of using Latinized or Hellenized names. Thus Agricola (from Bauer), Melanchthon (from Schwarzerd), Œcolampadius (from Hausschein),—all German contemporaries of Hohenheim.

sequences had much influence toward energizing the thoughts and stimulating the imagination of the generation that followed.

Through nearly four centuries the name and fame of Paracelsus have come down to us with something of the legendary haze that characterizes the age of fables. It is quite generally recognized that he left a distinct impress upon the theory and practice of medicine, though there have existed great differences of opinion as to the extent of that influence and whether, on the whole, it was beneficial or detrimental to the development of the science. It is admitted that he inaugurated a new era in chemical activity by diverting the attention of chemists from the vain aims of medieval alchemy to the application of chemistry to use in medicine. It is recognized that he introduced some rational ideas into the practice of surgery. Paré, sometimes called the father of modern surgery, a younger contemporary of Paracelsus, is said to have acknowledged his indebtedness to the earlier writer.[2] Erdmann in his *History of Philosophy* credits him with having inaugurated the era of the modern development of the philosophy of nature. English readers know that his life and thought inspired the *Paracelsus* of Robert Browning. Books have been written to show that to Paracelsus we must look for the beginnings of homeopathy. Goethe scholars have attempted to find in the works of Paracelsus much of the inspiration and material of *Faust*. Modern mystics have

[2] Cf. Stoddart, *The Life of Paracelsus*, London, 1911, p. 65.

sought in him a fertile source of the revelation of the occult in nature, while students are not wanting who have found in his doctrines the earliest recognition of the necessary basis of modern scientific method. Writers, moreover, there have been who have disputed all these claims.

As with his work, so with his character and personality. By many of his disciples and critics early or modern he has been extolled as a skilled physician, a wise teacher, a great reformer, a sincere and pious and unselfish man. By many of his professional opponents and by other critics he has, on the other hand, been characterized as an ignorant egotist, a charlatan, a drunken braggart, a superstitious visionary.

Evidently not all of this can be true. Somewhere in this confusion of contradictory estimates must lie the true Paracelsus, for he was no mythical personage and could have possessed no impossible combination of qualities.

But whence come these antagonistic estimates, and why have opinions varied so extremely? What were his real accomplishments—what his true character and personality? To attempt to summarize the answers which, in the past few decades, modern historical research has made to these questions is the task of this essay.

There is, indeed, no great difficulty in understanding how it came about that the German-Swiss physician became thus credited with contradictory attributes. It was his fortune or misfortune to have

become the originator of a school of medical practitioners, which came into influence mainly after his death and which for more than a century waged a bitter warfare with the older or Galenic school. Paracelsists and anti-Paracelsists supported or condemned the theory, practice, life and character of the acknowledged leader of the newer school. Foolish and credulous adherents and admirers credited and spread tales and legends of his wonderworking and miraculous powers. Equally foolish but hostile or malicious antagonists invented or credited other fables to the detriment of the character and life of the founder of the despised and hated schism. For in the medical profession of the sixteenth and seventeenth centuries it was not with the weapons of modern science—with patient and critical experimentation—that differences of opinion were settled, but they were settled with the traditional weapons borrowed from the theologians and philosophers of the time—dialectics, the citation of authorities—while ridicule, slander and abuse were effective arguments in the hands of disputants.

From the thus accumulated mass of fable and exaggeration it is not easy to free the reputation of Paracelsus, to discover and justly estimate his real personality and influence.

The sources of reliable information are of two kinds: such unbiased contemporary records of the life and work of Paracelsus as exist—and which are none too numerous—and the internal evidence of his own published writings. While his writings

as collected by his editors are of great volume, their character is such as to offer much difficulty in their interpretation. Some of them were published during his life and under his supervision. Some of them were published from manuscripts in his own handwriting or by his amanuenses or secretaries, some edited from the lecture notes of his students, others were published from manuscripts of uncertain origin, and still others were manifestly either wholly or in part spurious. Great differences of opinion exist among Paracelsus scholars as to the degree of authenticity and as to the criteria of authenticity of the writings attributed to Paracelsus.

But few were printed during his lifetime, the greater part being published from twenty to seventy years after his death, and the original manuscripts of all his important works have disappeared. Johannes Huser of Basel, who edited the most authoritative collection of his works (1589-91), gathered together all available materials from public and private collections, and evidently carried out his laborious work with great fidelity and conscientiousness. He took pains to give the source of each of the books or articles included, and among them are many autograph manuscripts, and some also described as copies made from autograph copies known but not directly accessible to him. While it may be that Huser was at times deceived in the autograph character of a particular work, it is nevertheless true that upon his statements as to the source and probable authenticity of a particular writing we are at present mainly

dependent for the basis of our confidence in the authenticity of the works attributed to Paracelsus and included in his collected works. Huser indeed included many works in this collection of doubtful authenticity even when he expressed the belief or the knowledge that they were not genuine.

There exists a letter by a certain Bartholomäus Schobinger (dated April, 1576) which bears interesting testimony to the fact that even at that time in his opinion some alleged writings of Paracelsus were not authentic. He states, "Theophrastus, whom I knew very well, and who lived twenty-seven weeks in the house of my late brother-in-law, left behind him many books upon such things, in part occult [*verporgelich*] and a part of which he truly did not himself understand. . . . There are also many books printed under his name which Theophrastus neither saw nor made. For I knew well the style of Theophrastus and his usage in writing."[3]

No great value, to be sure, can be attached to this general and unsubstantiated assertion, but it is nevertheless interesting as supporting the judgment of Huser as regards some alleged writings of Paracelsus.

To the problem of separating myth from fact in the life history of Paracelsus, there has been brought to bear a large amount of serious and scholarly research, notably by German writers during the past thirty years. The motive for this reinvestigation

[3] Schubert and Sudhoff, *Paracelsusforschungen*, Frankfort-on-the-Main, 1887-89, II, pp. 140-44.

may be found in a revival of interest in the early history of scientific thought. For important contributions to the life story we are particularly indebted to the researches of Carl Aberle, Ed. Schubert and Carl Sudhoff, Raymund Netzhammer, R. Julius Hartmann, and Franz Strunz. For the partial solution of the problem of the authenticity of the works attributed to Paracelsus, we are chiefly indebted to the monumental critical bibliography of the printed books and manuscripts by Karl Sudhoff, the result of many years of exhaustive study of the collections accessible in the libraries of Europe.

To the work of these scholars and to other students of the work of Paracelsus, and to authorities on the early history of medicine and other sciences during the past half century, we are indebted for a new and better understanding of the personality, accomplishments and influence of the original and eccentric Swiss physician and philosopher.

THE EARLY LIFE OF PARACELSUS.

THEOPHRASTUS von Hohenheim, or Theophrastus Bombastus von Hohenheim, was born at Einsiedeln in Switzerland on the 17th of December, 1493. In his time this region was part of the German Empire, so that he calls himself German as well as Swiss. His father, Wilhelm Bombast von Hohenheim, was at the time a practising physician in that village. A portrait of him bearing the date 1491 is in the Carolino-Augusteum Museum in Salzburg. In Einsiedeln Wilhelm von Hohenheim had married an "honest person," a "*Gotteshausfrau des Gotteshauses unserer lieben Frau zu Einsiedeln*," and Theophrastus was so far as we know the only son and child of this union. At Einsiedeln was located a Benedictine monastery, and the town was then as now a place of pilgrimage.

When Theophrastus was about nine years old his father removed to Villach in Carinthia, where he continued to reside for the remainder of his life, and where he died in 1534 a respected citizen and physician, as contemporary local records bear witness.

There was located at Villach a mining school founded by the Fuggers of Augsburg, and the region was an important mining district.

It is probable that Theophrastus received his first schooling, and the beginnings of his medical training from his father. Details as to his formal schooling, either preliminary or university, are lacking. Such information as we have is from occasional statements of his own and from allusions here and there in his writings to his experiences as a student. That his attention was early drawn to chemistry seems certain. It is quite probable that his father had some knowledge and interest in chemical processes as practised in the mining regions.

In one of his surgical treatises, Paracelsus, referring to his endeavors to eliminate the useless transmutation experiments of chemistry from the experiences useful to medicine, thus alludes to his preparation for that task:

"From childhood up I have pursued these things and learned from good instructors who were most thoroughly grounded in the *adepta philosophia* and firmly grounded in the arts. First, from Wilhelmus von Hohenheim, my father, who has never forsaken me. Afterward and besides him a great number not necessary to enumerate, and many writings of ancients and moderns, as well, of various origins;—some who have given themselves much trouble, as Bishop Scheyt of Stettgach, Bishop Erhart and his predecessors of Lavantall, Bishop Nicolaus of Yppon, Bishop Matthäus Schacht, suffragan bishop

of Phrysingen. And many abbots, as of Sponheim[1] and others, and many among the doctors and their like. And I have also had great experience, and for a long time, with many alchemists who have investigated those arts, as namely with the noble Sigmund Füger of Schwatz and a number of his employed artisans."[2]

It appears that Paracelsus visited Füger's mines and laboratories at Schwatz in Tyrol when about twenty-two years of age and worked there for nearly a year, thus laying the foundation of the extensive knowledge he possessed of the usual chemical and metallurgical processes of the period and region.

Whether or not the young Theophrastus had before this attended any of the German universities, and what progress he had made in medical studies is not known. Shortly after leaving the laboratory of Füger in Schwatz he embarked upon a career of travel covering a long series of experiences in many countries in the study and practice of his profession. Of this period again the only information we have is derived from the brief statements and allusions scattered through his writings. These have been examined and compared as to their consistency and in their relation to the local history and events of the time, by several scholars, last and notably by Dr. R. J. Hartmann, with the result that a consistent and probably fairly correct outline of his wanderings has been constructed.

[1] The eminent Trithemius, neo-Platonic philosopher and student of magic and the Cabbala.

[2] *Chir. Bücher und Schrifften* (1618), pp. 101f.

It appears from this evidence that after leaving Schwatz and up to the time of his appearance as a practising physician in Strassburg in 1526, he had served in campaigns as army surgeon or physician

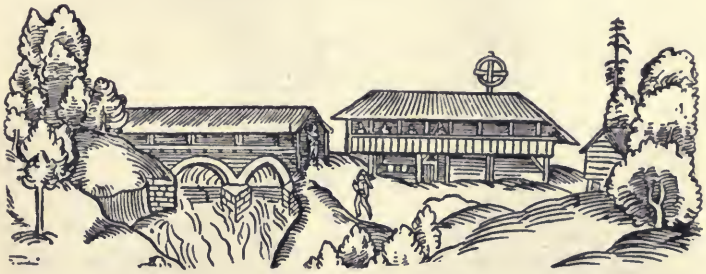
EINSIEDELN IN 1577.

The Devil's Bridge and the Paracelsus House will be discovered somewhat below the center.

in Denmark and Sweden, that he had visited England, France, Belgium, and that, probably also as an army surgeon, he had participated in the wars in the service of Venice (1521-25). It will be remembered

that Swiss mercenaries were then largely used in the several wars taking place in different parts of Europe. At times during this period he appears also to have visited or attended various universities in Germany, France and Italy, and at some time or other received or assumed the title of Doctor.

No positive evidence has been found that Paracelsus received the degree of Doctor of Medicine. His antagonists in the profession even during his



DEVIL'S BRIDGE AND PARACELSUS HOUSE IN 1577.
It is in this house that, according to an old tradition, Paracelsus was born in 1493.

lifetime disputed his title to it, a charge which he alludes to disdainfully but to which he makes no formal reply. On the other hand, the assumption of his having received the degree is supported by his use of it in his earliest writings and consistently afterward, by the presumption that he would not have been appointed as the city physician (*Stadt-arzt*) of Basel and professor in the University without having satisfied the authorities as to his technical qualifications. The records of his admission to the

PARACELSUS BY RUBENS(?)

Brussels. Hardly by Rubens himself, but by Jan Wildens, one of his pupils. The portrait is evidently a copy of an earlier one in the Louvre at Paris, at present supposed to have been painted by Scorel in 1517, but formerly attributed to Dürer.

rights of citizenship in Strassburg in 1526 describe him as "Doctor of Medicine." Such contemporary records as exist, official and unofficial, credit him with the title, but he nowhere mentions the university which conferred the degree, and the belief as to whether he received it at all or assumed it is largely influenced by the confidence of any particular critic in the truthfulness and sincerity of Paracelsus himself.

In later years his opponents made his wandering life a matter of reproach, and his reply furnishes us with one of the few extended autobiographical sketches contained in his writings:

"It is necessary that I should answer in defense of my wayfaring—that I have remained nowhere long. How can I do that or overcome that which it is impossible for me to do or to overcome? How can I add to or take away from that which is predestined?. . . . The wanderings that I have thus far accomplished have proved of advantage to me, for the reason that no one's master grows in his own house nor his teacher behind the stove. Also all kinds of knowledge are not confined to the fatherland but scattered throughout the whole world. They are not in one man nor in one place. They must be brought together, sought and found where they exist. The stars bear witness that their inclinations are scattered wide and not for each one in his own village, but according to the nature of the higher spheres, the radii pass to their goals. Is it not proper for me to seek out these goals and

to find out the effects in each? If I should fail in this regard I should not worthily be the Theophrastus that I am. Is it not true that knowledge pursues no one but that it must be sought? Therefore I have right and reason—that I should go to seek it, and not it me. . . . Thus, if any one wishes to see a person or a city, to learn their manners and customs, of their constellations and the nature of their elements he must pursue them. . . . How can a good cosmographer or geographer develop behind the stove? Does not seeing with the eyes give a true foundation? . . . . I have heard repeatedly from those experienced in the laws that it is written in the laws that a physician must be a traveler. This pleases me very well for the reason that diseases wander hither and thither as wide as the world is, and do not remain in one place. If one will know many diseases he must wander also. If he travels far he experiences much and learns to know much. . . . Does not travel give more knowledge than sitting behind the stove? . . . . Not merely to describe countries as to how they wear their trousers, but courageously to attack the problem as to what kinds of diseases they possess. . . . For the arts have no feet so that the butcher can drive them to you, they are not brought in on cushions nor enclosed in casks. Since that is their nature you must pursue them, as they cannot come to you. The English humors [*humores*] are not the Hungarian, nor the Neapolitan, the Prussian; therefore you must go where they are, and the more you seek them, and the more you

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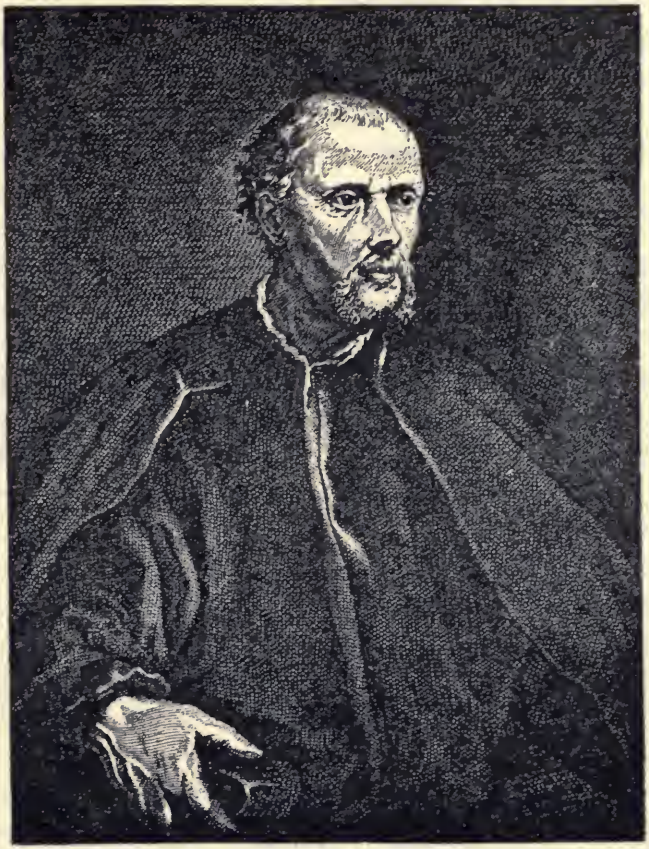


AVREOLVS PHILIPPVS
AB HOHENHEIM.
Stemmate nobilium genitus PARACELSVS avorum.
Qua vetus Helvetia claret Eremus humo.
Sic oculos Sic ora tulit cum plurima longum
Ducendi studio per loca fecit iter
I. Tintoret ad vivum pinxit

THEOPHRASTVS BOMBAST
DICTVS PARACELSVS
Lustra novem et medium vixit lustro orbe Lutherum
Postque tuos lustro funeau, Erasme, rogos,
Astra quater Sena Septembris luce subivit
Ossa Salisburgæ nunc cineresque jacent
F Chauveau Sculpsit.

PARACELSUS BY TINTORETTO(?)

Engraved by F. Chauveau. May be by an artist of about 1520-25, when Paracelsus was in the Venetian wars. Tintoretto was born 1518.*

*For data concerning portraits we are chiefly indebted to the scholarly researches of Dr. Karl Aberle, *Grabdenkmal, Schädel und Abbildungen des Theophrastus Paracelsus*, Salzburg, 1887-91.

experience, the greater will be your understanding in your own fatherland. Also it is necessary that the physician be a chemist [*Alchymist*]. If now he wishes to be such, he must seek out the matrices in which the minerals grow. But the mountains will not come to him, he must go to them. Where the minerals are there are also the experts who know them. . . . I pass over other things that he who wanders hither and thither gains in knowledge of many peoples—experience of all kinds of habits and customs, to see which, one should be willing to wear out his shoes and hat. Does not a lover go a long way to see a pretty woman? How much better to pursue a beautiful art! If, then, there exists such a need [to travel] how can one be condemned and despised for so doing? It is indeed true that those who do not roam have greater possessions than those who do; those who sit behind the stove eat partridges, and those that follow after knowledge eat milk-broth. Those who hug the fireplace [*Winkelbläser*] wear silks and golden chains, those who wander are scarce able to pay for their homespun; those within the town-walls have it cold or warm as they wish, those in the arts—if there were no trees—would have no shade. He who will serve the belly—he will not follow after me, he will follow those who go about in fine clothing. Yet travel is not for such as these, for Juvenal has said he alone wanders joyfully who has nothing. Therefore let them conform to that saying—that they may not be murdered let them stay behind the stove and turn

pears before the fire. Therefore I consider that it is for me a matter of praise, not of blame, that I have hitherto and worthily pursued my wanderings. For this will I bear witness respecting nature: he who will investigate her ways must travel her books with his feet. That which is written is investigated through its letters, but nature from land to land—as often a land so often a leaf. Thus is the Codex of Nature, thus must its leaves be turned."[3]

In the year 1526, at about the age of thirty,

SEAL OF PARACELSUS

COAT OF ARMS OF THE BOMBASTS OF HOHENHEIM

Paracelsus is again found in Germany. It appears that he soon attracted attention as an original and skilful physician, though the conventionally trained physicians viewed him with suspicion and hostility. "I pleased no one but the sick whom I cured," is his own statement of the situation.

The official records of Strassburg show that in 1526 "Theophrastus von Hohenheim, Doctor of Medicine, has purchased the citizenship [*Burgrecht*] and serves with the *Luzerne*. Enacted Wednesday

[3] *Op. fol.*, I, 257ff.

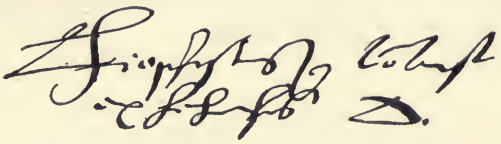
after Andreas Apostate [Dec. 5th]." The guild of Luzerne was that of the grain-dealers and millers to which also the surgeons belonged.[4]

Before entering, however, upon his duties and privileges at Strassburg, he received the offer of the position of *Stadtarzt* or city physician at Basel, a position which carried with it the functions of a professorship in medicine at the University. In the Preface to his manuscript *De gradibus*, dated November, 1526, he signs himself "Physicus et Ordinarius Basiliensis," that is to say, Physician and Professor at Basel.

The story of his appointment at Basel is interesting. The distinguished book-publisher of Basel, Johann Froben (Frobenius) was suffering from a painful illness which defied the efforts of the physicians. Hearing of the remarkable skill of the new physician, he sent to him at Strassburg to come to Basel, and through his ministrations found speedy relief. Froben's house in Basel was frequented by a number of scholarly persons, notably by Erasmus who at that time lived in Froben's house and by Œcolampadius, then professor of theology in the University of Basel, both prominent in the reformation movement in Switzerland. Impressed by the personality and medical skill of the new physician, these men—and particularly, it is said, Œcolampadius—prevailed on the city authorities (*Stadtrath*) to offer the then vacant position of city physician to Paracelsus, an offer which was at once accepted.

[4] Cf. Schubert and Sudhoff, *Paracelsusforschungen*, II, p. 3.

We have evidence of the good impression made by Paracelsus on Froben and his friends in a letter of Erasmus written to Paracelsus some time later—probably during the summer of 1526. The letter of Erasmus is in reply to a letter of the physician in which he has given directions and prescriptions for certain ailments of Erasmus, and though the general tone of the letter of Erasmus is expressive of some dissatisfaction as to the indefiniteness of his directions it concludes, "I cannot offer thee a reward equal to thy art and knowledge—I surely offer thee



SIGNATURE OF PARACELSUS IN 1528,
reading: "Theophrastus Bombast ex Hohenheim D." Cf. Schubert and Sudhoff, *op. cit.*, II, p. 73.

a grateful soul. Thou hast recalled from the shades [*ab inferis*] Frobenius who is my other half: if thou restorest me also thou restorest each through the other [*utrumque in singulis*]. May fortune favor that thou remain in Basel."

Paracelsus evidently entered upon his important position as city physician and university teacher with zeal and energy. He had returned from his extensive experience in foreign lands and his contact with different notions of the practice and theory of medicine with distinctly radical ideas. He doubtless hailed with enthusiasm and much self-assurance

this opportunity to propagate his ideas as to the reform of medical theory and practice. That Paracelsus overestimated at the time his ability to influence the ultraconservative, traditional, dogmatic medicine of his time, and that he greatly underestimated the strength of the forces whose antagonism he challenged is also certain.

His experience at Basel soon forced him to realize that the victory of his ideas was distant, and though he never ceased his efforts, the bitterness of his disappointments and resentments against the persecutions and abuse of his opponents gave color and character to his later life.

THE PARACELSAN VIEW OF NATURE.

THAT we may be able to comprehend the nature of the conflict between the theories of Paracelsus and the traditional dogmatic philosophy which he opposed, it is essential that we attempt to understand something of the current thought in the domains in which Paracelsus endeavored to impress his reformatory ideas.

His great aim was to break the bonds of ancient authority and accepted dogma which had for centuries held medical science enchained, and to open the way for the foundation of that science upon a basis of open-minded experience, experiment and observation, or, as he expresses it, on the "Light of Nature."

But "nature" to the view of the school of philosophy which Paracelsus adopted comprehended much that to our modern view is occult or supernatural. It comprised the influence of the stars upon the life and health of men and many other mysterious phenomena then generally credited by all classes of people. The knowledge of nature was to be achieved not merely, therefore, by the eyes and the hands—by experiment and observation as we understand

the study of nature—but also by a more mystical insight into the hidden properties of things.

For Paracelsus the phenomena of nature. seen or hidden, are the revelation of God's will to man in all those things relating to his physical and material welfare—just as the teachings of Christ are for him the revelation of God's will to man in things spiritual. Hence the physician as the highest human agent of God's will to man, must be thoroughly grounded in the complete knowledge of nature, and as thoroughly in obedience to the teachings of Christ. For the interpretation of the phenomena of nature as for the interpretation of the teachings of Christ, he claims the right for himself and for his individual judgment, and refuses to accept the authority of ancient Greek philosophers or physicians—or of Church-Fathers or other sources of dogmatic theology.

The study of nature and its phenomena was, it may be remembered, the latest field to feel the Renaissance impulse, and it was in the sixteenth century still largely dominated by the medieval point of view.

"To the Middle Ages and its scholastic science," says Windelband,[1] "nature was a closed book upon which the Church had placed its seal. Nature was the profane, the wicked; it was hated, combated, despised, oppressed, anathematized, anything but known, investigated or understood. And in the natural recoil there took possession of the spirit

[1] *Geschichte der neueren Philosophie*, Leipsic, 1907, I, p. 42.

awakening to freedom, conscious of its power, a longing for nature, for a natural form of life, for a knowledge and command of the forces of nature.

"But nature was a mystery. She seemed to wish to be revealed through a mysterious knowledge. It was felt that living nature was not to be approached through the scholastic concepts of science, its demonstrations and determinations, and before a new method was arrived at, it was believed that nature was to be approached through some peculiar revelation, by a mystical secret doctrine, and thus the struggle toward the knowledge of nature took at first a fantastic direction."

Or as Cassirer[2] summarizes the natural philosophy of the Renaissance, "Through the dense veil with which fantasy and superstition surround them, there nevertheless emerge the outlines and forms of a new view of the eternal reality. The intellectual labor of the time leads but rarely to sure and fruitful results with which later science can connect, but it nevertheless anticipates, in symbolic form and language, general processes of thought which are to be repeated in the upbuilding of science."

These characterizations apply well to the concepts of nature and natural phenomena in the time of Paracelsus and as found in his own writings.

Among the conventional scholars of the time the prevailing natural philosophy was a degenerate

[2] *Das Erkenntnisproblem in der Philosophie und Wissenschaft der neueren Zeit* (2d ed.), Berlin, 1911, I, p. 205.

Aristotelianism, which had been transmitted, modified and obscured by Arabian interpreters and through Oriental influences corrupted by much more of mysticism than existed in the original Greek sources. During the Renaissance there had developed a revival of the neo-Platonic philosophy. The generally credited originator of this revival is Nicholas of Cusa (1401-1464), but its chief propagandists were in the Florentine Academy—notably Giovanni Pico della Mirandola (1463-94) and Marsilius Ficinus (1433-99). Through the latter this somewhat fantastic natural philosophy had spread to Germany, where Reuchlin (1455-1522), Trithemius (1462-1516), Cornelius Agrippa von Nettesheim (1486-1535) were prominent exponents, while in France Bovillus (1476-1553) was a prominent representative.

Of these men Trithemius has previously been named in a quotation from Paracelsus as among his teachers. Ficinus and Agrippa are also mentioned by him as authors with whose works he is familiar. Agrippa's lifetime, it will be observed, is contemporaneous with Paracelsus's—in fact, he was but a few years older. It may be safely assumed that to one or more of this school Paracelsus was indebted for the fundamental notions of his philosophy of nature —whether directly to Ficinus and Lullus, as Professor Sigwart[3] thinks, or to Agrippa, as Alfred Lehmann[4] believes, is at present difficult to decide.

[3] Chr. Sigwart, *Kleine Schriften*, 2d ed., Freiburg, 1889, I, p. 42.

[4] A. Lehmann, *Aberglaube und Zauberei*, etc., 2d ed., Stuttgart, 1908.

Lehmann calls attention to the fact that Pico della Mirandola wrote his *Conclusiones cabbalisticae* in 1486 and that a pupil of his [Ficinus?] initiated Trithemius into the Cabbala. Trithemius was a friend of Reuchlin who was a profound student of Hebrew and of the Cabbala. From Reuchlin Agrippa probably received the foundations of the theory and he also was a friend of Trithemius.

As Paracelsus mentions both Ficinus and Agrippa, and acknowledges Trithemius as his teacher, we may well believe that he drew from all these sources in the construction of his own theories. Though the natural philosophy of Paracelsus was deeply rooted in the neo-Platonic philosophy of the Florentine Academy, yet Paracelsus was too original and venturesome a thinker to be a strict adherent of any particular form of philosophy. It probably especially appealed to him because it was in the nature of a revolt from the dry and lifeless Aristotelianism of the day, and because it opened the path to the recognition of the value of experiment and observation as the basis for the development of medicine.

Fantastic as the neo-Platonic philosophy of that time seems to our present views, there was much in it to appeal to the popular notions of the fifteenth and sixteenth centuries. The attempt to unite into a quasi natural philosophy the many mysterious phenomena of nature as they presented themselves to the belief of that time—the supernatural phenomena as well as many equally mysterious natural phe-

nomena—was inspiring to the imagination. The "natural magic" of Agrippa and the philosophy of Paracelsus attempted to give rational explanations of many things which the orthodox philosophy of the period accounted for only in a purely mystical sense.

A fundamental concept of this neo-Platonic philosophy was the interrelation of all the phenomena of the universe, such that every phenomenon has an influence upon every other. As the earth was considered the center of the material universe, so man was considered in a higher sense the center and the epitome of the external universe. Man is the microcosm, the external universe the macrocosm. Through their spirits or occult properties all things in the universe, sun and moon and stars, plants and animals, metals and waters, may exert definite influences upon man, his mental and physical states. So, too, it is not impossible that man through knowledge of these occult or hidden properties of things may be able to influence the powers of nature in marvelous ways. Or, as says Cassirer[5] in discussing the philosophy of the French neo-Platonist Bovillus, the investigation of the macrocosm is to enable us to obtain clearer views of what takes place in the microcosm—"In fantastic analogies the comparison of the universe with human life is developed and interpreted."

Lehmann[6] has given us a synopsis of the natural magic of Agrippa, and the resemblance to much of

[5] *Op. cit.*, I, p. 63 [6] *Op. cit.*, pp. 195-202.

Paracelsus's theories is striking. Agrippa attributes to all objects in the universe sympathies and antipathies, and believes that by influencing these sympathies and antipathies by appropriate methods extraordinary or supernatural results might be obtained. "This natural magic," says Lehmann, "first attained great importance when its fundamental ideas with certain changes were adopted as an essential element in the medical system of Paracelsus." Agrippa says, "The world is threefold, namely, elementary, sidereal, spiritual. Everything lower is ruled by the higher and receives thence its power. Thus the Architect and Prototype of the universe lets the powers of His omnipotence flow out through the angels, the heavens, the stars, the elements, the animals, plants, rocks, and thence into man." And thus, thinks Agrippa, it becomes possible for man through the powers of nature to reascend the ladder and to gain supernatural powers and knowledge. This natural magic is to him the greatest of the sciences. It comprises: *Physics*, or the knowledge of the nature of things which are in the universe—their causes, actions, times, places, appearances, as a whole and in its parts; *Mathematics,* which teaches us to know nature in three dimensions and to observe the paths of the heavenly bodies; *Theology*, which teaches us of God, the soul, intelligences, angels, devils and religion; it teaches us also the sacred observances, forms and mysteries; and finally it informs us concerning the faith and the miracles, the powers of words and symbols and the sacred

operations and mysteries of the seals. These three sciences the natural magic brings together and perfects. He who does not know these three sciences cannot understand the rationality of magic.

Agrippa supposes all substances to be composed of the four Aristotelian elements, Fire, Earth, Water and Air. Everything is composed of these, not by a simple heaping together but by combination and metamorphosis, and everything falls back, when it perishes, into the elements. None of these elements occurs pure in nature, but they are more or less mixed and may be confused with one another. Each of the four elements has two special qualities of which one is the characteristic quality, the other forms the transition to another element. This is represented by a diagram illustrating the four qualities and the four elements in their relation to one another—in the Aristotelian fashion:

hot — *Fire* — dry
Air ——|—— *Earth*
moist—*Water*—cold

According to Agrippa also, all things of higher nature or sphere in the three divisions or worlds of the universe, influence the lower, but the lower also influence the higher, though in less degree. Also all things in the same sphere influence one another in that everything attracts and is attracted by its like.

The philosophy of Paracelsus presents distinct resemblances to that of Agrippa. The form of the

neo-Platonic philosophy presented by Agrippa may well have served as his starting-point, but the differences are also important. Paracelsus was manifestly quite in agreement with Agrippa as to the three divisions of the universe and their mutual influences upon one another. The concepts of man as the microcosm, and the outer universe as the macrocosm, and that by the study of the macrocosm the knowledge of the microcosm must be reached, were with Paracelsus as with Agrippa and also with his contemporary Bovillus, dominant ideas.

Instead, however, of the three sciences of Agrippa, Physics (meaning natural philosophy), Mathematics (including magic numbers—the Cabbala) and Theology, upon which is founded the Science of Natural Magic, Paracelsus substitutes *Philosophy* (meaning also natural philosophy), *Astronomy, Alchemy* (meaning chemistry) and *Virtue* (or righteousness), which he constitutes the four pillars upon which the Science of Medicine must rest. "Virtue" as a separate science differs from the "Theology" of Agrippa mainly in the rejection by Paracelsus of the many forms, ceremonies and miracles upon which Agrippa places emphasis.

Paracelsus rejects the four Aristotelian elements as the determining constituent principles of all bodies and substitutes for them his three alchemical elements, *Mercury,* the principle of liquidity and volatility, *Sulphur,* the principle of combustibility, and *Salt,* that principle which is permanent and resists the action of fire.

The philosophy of nature as presented by Paracelsus differed even more in the emphasis and the application of the fundamental ideas than in the formal philosophical notions. For Paracelsus was not a closet philosopher. His reasoning was often loose and careless. He was, it would seem, not so much interested in elaborating a natural philosophy for its own sake as in utilizing the neo-Platonic system in which he had been more or less schooled as a substitute for the Aristotelian and Galenic philosophy which to his mind stood in the way of the rational development of the science of medicine on the basis of the study of nature. His adaptation of the current neo-Platonic theories was not so much a carefully thought-out and consistent philosophy as it was an imaginative adaptation of such elements of it as could fit into the system of things as he saw them, and he introduced such modifications and extensions as harmonized with his medical, chemical and theological ideas—ideas which he had arrived at not only through the conventional channels of the schools, for which sources indeed he felt but little respect, but also through his contact with a wider school of observation and experience among all classes of people and in many lands.

Thus his system of philosophy, less consistent and less logically developed than the philosophy presented by Ficinus, Bovillus, or even by Agrippa, nevertheless, because it had application to the practical profession of medicine and chemistry, was of more direct influence on the common thought of the

time. As a recent writer has expressed it,[7] "Paracelsus arrived at his mystical system long before Copernicus appeared. The great impulse that proceeded from the latter and produced a cosmological thinking and view-point had not reached him. Nevertheless, he as metaphysician was the first who saw the world as in motion. Nearly a century after him [*sic*] arose Giordano Bruno. Cardan also was younger than Paracelsus. The only influence which could have reached him from outside, apart from the medieval influence of Meister Eckehart, was that of the revivified neo-Platonism, that fashionable philosophy of the late Renaissance. But that was only a cold transparent metaphysics of ideas, which must have hindered rather than have furthered the development of a metaphysics of nature, so warm, so full of life and actuality as was that which Paracelsus has given us. For this was remarkable—that his mysticism was always a mysticism of actuality—that his cosmos always remained nature."

Or to quote from the eminent historian of philosophy J. H. Erdmann:[8] "Although the doctrine of the Macrocosm and Microcosm was of primitive antiquity and had even lately been emphasized by Raymond of Sabunde, who had not remained unknown to Paracelsus, yet it is only since and by means of the latter that it was made the central point of the whole of philosophy. He designates

[7] Moeller van den Bruck, *Die Deutschen,* Minden i. W., n. d. (1904), III, p. 74.

[8] *History of Philosophy* (trans. by W. S. Hough), London, 1893, I, p. 613.

nature as the sphere of philosophy and hence excludes from the latter all theology. Not as though the two were antagonistic, or as though theology were subordinated to philosophy, but the works of God are either works of nature or works of Christ: the former are comprehended by philosophy, the latter by theology."

While it is foreign to the purpose of this treatment to describe in great detail the natural philosophy of Paracelsus, a brief summary of some of the more characteristic features will serve to enable us better to understand the influence and significance they possessed for the time in which he wrote.

Paracelsus divides the external universe or macrocosm into three worlds, the *visible* and *tangible*; the *astral* (or sidereal), the world of the heavenly bodies; and the *celestial,* or the divine and spiritual. Similarly he sees in man, the microcosm, three corresponding spheres, the visible and tangible, that is, the fluids, organs, bones, etc.; the astral, the sensations, seeing, feeling, perception; the celestial, the soul (*Seele*). The sciences which treat of these three divisions of the macrocosm, are philosophy, the science of the phenomena of nature; astronomy (and astrology); and theology or virtue (*proprietas*). As, however, the microcosm is to be understood and interpreted through the macrocosm, he who would know what takes place in man, and what affects his life, health, and well-being must be thoroughly grounded in these three sciences. To these Paracelsus adds alchemy, which term, however, he

uses in the sense of chemistry rather than in the mystical sense which at present we attribute to the word alchemy. He adds chemistry as the fourth pillar of medicine, as he considers that all substances, even the four Aristotelian elements, are made up of the three chemical principles Mercury, Sulphur and Salt, and the processes in nature which effect changes in the forms of matter are similar in character to the changes which may be produced in the laboratory of the chemist. Nature is herself an alchemist. So he says:[9]

"Now further as to the third foundation on which medicine stands, which is alchemy. When the physician is not skilled and experienced to the highest and greatest degree in this foundation, all his art is in vain. For nature is so subtle and so keen in her matters that she will not be used without great art. For she yields nothing that is perfected, in its natural state, but man must perfect it. This perfecting is called alchemy. For the baker is an alchemist when he bakes bread, the vine-grower when he makes wine, the weaver when he makes cloth. Therefore whatever grows in nature useful to man—whoever brings it to the point to which it was ordered by nature, he is an alchemist."

When Paracelsus speaks of philosophy as the knowledge of nature—"As now the physician must develop from nature—what is nature other than philosophy?—what is philosophy other than invisible nature?"[10]—it should be kept in mind that to his

[9] *Op. fol.*, I, 219, "Paragranum." [10] *Ibid.*, I, 205.

mind as to his contemporaries generally, the phenomena of nature included a great number of supposed facts which the knowledge of our day relegates to the domain of fable and superstition. The influences of the stars, of angels and devils, spirits of the air or the waters, gnomes and nymphs were generally credited in his time. The neo-Platonic view of the universe which Paracelsus represented encouraged the belief in such existences by its assumption of the influences exerted by all things upon one another and upon man through the sympathies and antipathies of their spirits (*Geister*). The belief in the influence of the stars was well-nigh universal, and "astronomy" comprehended "astrology." The customary interpretation of the nature of the influence of the heavenly bodies upon man's health was purely mystical. Troels-Lund[11] quotes from H. Ranzau (1676), a post-Paracelsan writer, the following discussion which may be accepted as fairly representing the conventional and purely mystical view of the matter:

"The first cause of disease is the fall of the first man with which came sin and death into the world. The second cause is the influence of the stars. God created these not only that we may be able to measure the years, months and days, but also that they should be a sign to us from which we may draw conclusions as to the future. For the inferior world is dependent upon the superior. The heavenly bod-

[11] *Gesundheit und Krankheit in der Anschauung alter Zeiten*, Leipsic, 1901, p. 80

ies exercise a certain mysterious action and influence upon the lower conditions whereby the fluids [*Säfte*] of the body are modified, augmented or diminished, according to the position and character of the stars. Daily experience, in all things the surest teacher, shows this so plainly and clearly that no further proof is needed. If any one lacks confidence in this let him but observe the influence of the moon and he will be convinced. For with a crescent moon the fluids of the body increase also—the blood, the brain—the marrow—in man and in animals. The fluids of our bodies are therefore ruled by the heavenly bodies, but from bad fluids arise diseases and from diseases—death."

Even before Paracelsus there were symptoms of a tendency to discredit the mystical notions of the influence of the stars. Thus Giovanni Pico della Mirandola, who died the year following Paracelsus's birth, says:

"The stars can only indicate and predict what they themselves cause. Their real and natural signs belong to the material world and are subject to its laws. They are either the causes or the effects of the happenings which they indicate or predict. The heavenly bodies possess no occult qualities by whose power they are able to produce secret influences on earth. Not in the heavens but in himself must each read the foundations of his destiny. A great thinker such as Aristotle is indebted for his capacities and accomplishments not to the stars under which he

was born, but to his own genius which he received from God."

So Paracelsus says: "Adam and Eve received their bodies at the creation and through the principle of the seed up to the passing away of the world. And though no star or planet had existed nor yet were, children would be just so born, complexioned and natured as they now are—one melancholic, another choleric, one true, another untrue, one pious, another wicked. Such qualities are in the entity of their natures and do not come from the stars, for they have no part in the body, that is, they give no complexion, no colors, no form, no characteristic traits, no nature, no individuality."[12]

"The course of Saturn disturbs no man in his life, neither lengthens nor shortens it. For if Saturn had never been in the heavens nor in the firmament, people would be born just so, and though no moon had been created still would people have just such natures. You must not believe that because Mars is cruel, therefore Nero was his child. Although they had the same nature neither obtained it from the other. You see Helen and Venus of one nature, and though Venus had never existed still would Helen have been a strumpet, and although Venus is older than Helen consider that before Helen there were also strumpets.

"A seed that is thrown into the earth yields its fruit of itself, for it has the principle of the seed [*ens seminis*] within it, but if the sun were not, it

[12] *Op. fol.*, I, 5, "Paramirum."

would not grow. Think not that the sun makes it, nor the firmament nor such things, but mark that the warmth of the sun sets it its time. . . . A child may not grow without its digestion [gestation] for it grows in the digestion, that is to say, in the mother, and therefore the child needs no stars nor planets, its mother is its planet and its star. The seed must have digestion and that takes place in the earth. The earth, however, affords no digestion without the sun, but the mother is a digestion without any stars. . . ."[13]

"But understand also the virtue of the stars. The stars have their nature and their manifold properties, just as on earth men have. The stars have also their changes, sometimes better, sometimes worse, sweeter or sourer, milder or bitterer. When they are good nothing evil comes from them, but when they are evil, evil comes from them. Take note that they surround the earth as the shell an egg: the air comes through the shell and passes first through them toward the center of the world. Therefore note now that those stars which are poisonous—they contaminate the air with their poison. Therefore when these poisons come to any place such diseases appear there as have the properties of those stars. It may not poison the whole earth but only that part where its influence is strongest. And so also it is with the good influences of the stars."[14]

This is an illustration of a very characteristic habit of Paracelsus, of explaining generally accepted beliefs of his time by some plausibly rational theory.

[13] *Ibid.*, I, 6.

[14] *Ibid.*, I, 7.

In his time when the Ptolemaic cosmology prevailed, the earth was the center—about which sun, moon and planets revolved, and the atmosphere was commonly supposed to extend to and to support them in their places. To the thought of our time strange and fantastic—yet to his own time there was nothing absurd in this imaginative hypothesis to account for such influences upon health and diseases as Paracelsus with others credited to the heavenly bodies.

The following passage is, however, less consistent with the foregoing quotations, and more in accord with the philosophy of Agrippa. Says Paracelsus:[15]

"Therefore know that the wise man can rule and master the stars, and not the stars him. The stars are subject to him and and must follow him and not he them. A brutish man is ruled, mastered, compelled and necessitated by the stars, so that he has to follow them like the thief to the gallows, the murderer to the wheel."

The study of all nature was essential to the physician according to the view of Paracelsus—because only through a complete understanding of external nature (the macrocosm) could the physician completely understand the influences affecting man (the microcosm). To quote:[16]

"The heaven is its own physician as is a dog of its wounds, but man has his shortcomings in such things. For as he is more than a mortal creature,

[15] *Op. fol.*, I, 910, "De natura rerum."

[16] *Op. fol.*, I, 216, "Paragranum."

he must have more knowledge. He must know what is in the heavens and what in the earth, what in the air, and what in the water. Why is this so? In order that he may know who he is and from what he is. If this knowledge were not necessary man would not be sick. But that man may know that, no matter what and who he is, he must recognize in his father [the macrocosm] diseases and health, and must see that this member Mars has made, this member, Venus, and this, Luna; this is from the Chaos [air]; in this place hast thou thy flesh and blood from the element water, there from earth. These diseases of men and of their health exist only for this that man may know the beasts of the forest and the field, and that he may see that he is like the beasts and not better. Therefore must man observe himself and gain experience of all created things that he may know himself."

The fourth pillar of medicine, virtue (*proprietas*), resolves itself in the hands of Paracelsus into a recognition of and obedience to the will of God and to his direction of the universe through the powers of nature and the teachings of Christ. Quite generally the subject is treated with direct application to the mission of the physician as the agent of God's will for the health of man through his understanding of the forces of nature, and to the duties of the medical profession toward the poor and the sick and their obligation to prepare themselves for their profession by studying their science in "the Light of Nature."

MEDICAL THEORY.

AS the main interest of Paracelsus lay in medicine, and as he rejected the ancient authorities on the theory and practice of medicine, it was of first importance to his mission that he should formulate a theory of medicine that should harmonize with his philosophy of nature and the results of his experience and observation. Naturally also his medical theory is closely related to his natural philosophy.

The history of medical science gives ample evidence of a great need of radical reform both in theory and practice at the period of the activity of Paracelsus.

The accepted body of medical doctrines as authorized by the medical faculties and taught in the universities was founded upon the ancient authorities of Hippocrates and Galen and their Arabian interpreters, and particularly of the latter. The Greek physician Galen had indeed accomplished much in his time to advance the practice of medicine, and had even performed dissections, not indeed on the human subject, but upon animal bodies. But to the physicians of the time of Paracelsus the ancient texts of Galen were almost unknown in their purity,

but were read only as transmitted, commentated and interpolated by Arabian interpreters, Avicenna, Averrhoës, Mesue and others. The Galenism of the sixteenth century was a corrupted Galenism overlaid with Oriental occultism and mysticism. Moreover, the medieval spirit still ruled in the profession. The teachings of the Arabian-Greek authorities had been for centuries and were still held as infallible dogmas. The doctrines of medical science were a finished book, just as the authorities of the Church were final—they might be commentated, expounded, interpreted and taught, but not contradicted nor seriously questioned. No experiments were encouraged, no doctrines or opinions tolerated that might be in evident contradiction to these sacred authorities. Though new diseases had arisen to puzzle the profession, no new unauthorized measures could be attempted to meet them. Naturally enough, while such a condition prevailed the medical profession was bound to degenerate into a self-satisfied caste. Naturally also ignorance and incapacity, fostered by the lifeless teaching of the conventional dogmas, theories and the stereotyped system of symptoms and remedies, often gave rise to pretentiousness and hypocrisy. It followed also that in the Renaissance, when men were thinking many new thoughts, there should have arisen a suspicion as to the sufficiency of medical theory and practice, not perhaps within the ranks of the conventionally trained profession itself—though here and there a voice was raised in protest against some phase or feature of medical

practice or theory—but more particularly among the laymen and the general public.

It was indeed during the very time when Paracelsus was acquiring his medical training, that Erasmus in his *Praise of Folly,* satirizing the follies of the time, said of the contemporary medical science, "And indeed the whole art as it is now practised is but one incorporated compound of craft and imposture." And Agrippa von Nettesheim, the elder contemporary in Germany of Paracelsus, had also written,[1] "The greatest reputation is attained by those physicians who are recommended by splendid costumes, many rings and jewels, a distant fatherland, tedious travels, a strange religion, especially the Hindu or Mohammedan, and who combine with these a monstrous shamelessness in the praising of their medicines and cures. They observe times and hours most exactly, dispense their medicines always according to the astrological calendar, and hang all kinds of amulets on the patient. Simple and native medicines are quite neglected. Costly foreign remedies are preferred, which latter are mixed in such enormous numbers that the action of one is counteracted by that of another, so that no human sagacity can foresee the effects which will arise from such an abominable mixture."

Peter Ramus, the distinguished French humanist and reform professor in the College of France—himself a great admirer of the work and skill of

[1] Baas, *Geschichtliche Entwickelung des ärztlichen Standes,* Berlin, 1896, p. 185.

Paracelsus, as shown in an essay urging certain reformations in the University of Paris (in 1562) —emphasized the laziness of the professors of medicine and theology, and complained that the analyzing of herbs and simples and the study of their effects upon the body were totally neglected.[2] The shortcomings of the medical profession were evidently not unappreciated by many able contemporary critics.

The medical theory of the period was based, as already mentioned, upon the doctrines of Hippocrates and Galen. With these Greek physicians, medicine had been indeed a living science, though primitive. They at least had learned by observation and experiment: but their medieval interpreters no longer experimented and their observations were only such as might enable them to apply the accepted doctrines and formulas of the ancient authorities. The teaching of medicine in the universities at the time of Paracelsus was practically confined to the reading of Avicenna, Mesue, Averrhoës and other interpreters of the Galenic doctrine, and commentaries and exposition of their meaning by the lecturer. Dissections and laboratory methods were lacking; though sometimes at rare intervals, when permitted by the civil and clerical authorities, demonstrations in anatomy—superficial and crude indeed—were made in the presence of the medical students and the physicians of the town. The first

[2] Cf. Graves, *Peter Ramus and the Educational Reformation of the Sixteenth Century*, Macmillan, 1912, pp. 80, 82.

important publication on anatomy, marking the beginnings of the development of modern anatomical studies, was that of Vesalius which appeared in print two years after the death of Paracelsus.

The authoritative theory of diseases was based upon the Galenic doctrine of the four humors or fluids of the body, phlegm, blood, the yellow and the black bile,—these being related by metaphysical analogy to the four elementary qualities—cold, dry, warm, moist. Any disturbances in the proper proportions of these fluids produced illnesses or disease. The nature of these disturbances was indicated by accepted symptoms. The treatment was directed toward restoring the supposed disturbed balance of qualities as indicated by the symptoms, and consisted generally of bleeding, purging, and the use of decoctions of herbs, generally extremely complex in their admixture. But through Oriental influences this Galenic theory, fantastic and unscientific as it was, had become complicated with astrology and other mysticisms, while the superstitions of the medieval Church, and the heathen superstitions of the northern European peoples were not without their influence upon local medical practice.

Troels-Lund[3] has interestingly described the prevalent beliefs of the sixteenth century as to the causes and cures of disease. They may be briefly summarized as follows:

First: Disease comes from God by His direct volition as warning or as punishment. The logical

[3] *Op. cit.*, pp. 41ff.

conclusion was that God should be permitted to effect the cure. Prayers, penances, and the offices of the Church were thus the natural instrumentalities through which the divine mercy might be invoked to relieve the suffering. Manifestly the skill of the physician had here little place.

Second: Disease comes from the influence of the Devil and his agents. Here again prayers, penances, exorcisms and purification by the offices of the Church might avail (white magic). So also, however, might magic ceremonies and formulas, and exorcisms by wise women, and magicians, who presumably owed their power to their superior knowledge of the occult powers of nature, or perchance even to unholy alliances with the powers of evil (black magic). Here also there was little room for the skill of the physician, though it might be he could assist—who could be certain?

Third: Disease comes from the stars. This notion has been discussed previously. Here evidently the physican might help, who knew the secrets of the heavens, and who gathered and prepared his remedies at the auspicious time and could administer them when the planets were favorable.

Fourth: Disease comes from the disturbances in the fluids or humors of the body. This was the Galenic doctrine above mentioned.

A fifth general idea as to the cause of disease mentioned by Troels-Lund, may have been but an elaboration of the fourth, viz., that disease was owing to something lacking in the body which medi-

cine could supply to restore as it were the equilibrium, and with this idea there was developed a body of *materia medica* during the sixteenth century which presented an astonishing catalog of often almost incredible and repulsive remedies.

To this question as to the causes of disease, Paracelsus, in his desire to replace the ancient authorities by something more in accordance with his own philosophy of nature, applied himself with characteristic originality, and with some intuitive insight.

He catalogs and describes five "entities," or active principles, which influence the health of man. These principles or influences are the *ens astrale*, or sidereal influence; the *ens veneni*, or influence of poisons; the *ens naturale*, or influence which exists in the nature of the individual, the microcosm; the *ens spirituale*, influences acting not directly upon the body but through the spirit (*Geist*); the *ens deale*—the will of God acting directly to produce illness by way of warning or punishment.

With respect to the first of these, the influence of the stars (the *ens astrale*) we have already seen that he recognizes the influence of the stars without admitting their control of the destinies of man, and we have had an illustration of his curious attempt to explain their influence by the hypothesis of various effluvia conveyed from the stars through the atmosphere.

His treatment of the second influence, the *ens veneni*, is of interest as illustrating both his com-

prehension of an important physiological fact, and his fanciful and imaginative elaboration of it into theory. "The body was given us without poison, and there is no poison in it; but that which we must give the body for its food contains poison."[4] He elaborates this idea by explaining that the plant and animal food which we eat contain both useful and useless material, wholesome and unwholesome, food and poison. In the body the food and the poison must be separated, the food being transformed into flesh and blood and bone, etc., the poisons eliminated. This separation, he considers, is effected by the "Archæus," a directing force or spirit. The Archæus, situated in the stomach, sorts out and separates the wholesome from the unwholesome in the food. So long as the Archæus performs his functions properly our food is wholesome and the body thrives. Should from any cause the Archæus become ill or incapacitated, the separation is incomplete and we suffer from the poisons being imperfectly eliminated. The Archæus is, then, says Paracelsus, an alchemist, for his functions are similar to those of the chemist in his laboratory. Other animals have their "Archæi," and their functions vary in degree from those of man.

"The peacock eats snakes, lizards, stellions; these are animals which in themselves are perfect and healthy, though to the needs of other animals sheer poison, but not to the peacock. For from whatever causes it may be, his alchemist is so subtle that the

[4] *Op. fol.*, I, 9, "Paramirum."

alchemist of no other animal equals him, who so cleverly separates the poison from the good, in that which the peacock eats without injury.

"Observe, then, that every animal has food adapted to it and which has been ordained for him by his alchemist who separates the proper materials. To the ostrich there is given an alchemist who separates iron," etc.[5]

In everything there is an essence and a poison; an essence is that which preserves man, a poison that which produces illness.

It is difficult to say to what extent Paracelsus believed that this presiding Archæus was a true spirit having an individuality or personality of its own, to what extent a term to typify a force or principle. It is interesting to note that in the Latin text of his work *De gradibus* (1526), published by Huser after the manuscript of the pupil and amanuensis of Paracelsus, Oporinus, the following definition appears: "Archaeus est ista vis quae produxit res, id est dispensator et compositor omnium rerum." The word *vis,* or "force," is here noteworthy, though not necessarily a demonstration of the exact notion possessed by Paracelsus himself.

To the philosophy of the neo-Platonists of the sixteenth century, however, the notions of force and principle and spirit were more closely connected, for as God was the soul of the universe, and as man —the microcosm—possesses a soul, so also all other parts of the macrocosm had souls or spirits. Or,

[5] *Ibid.,* I, 10. This is an ancient fable that the ostrich can eat iron.

as expressed by Agrippa von Nettesheim,[6] "It would be absurd if the heavens, the stars and the elements, which are for all beings the sources of life and soul, should themselves lack these—if every plant and every tree had part in a nobler destiny than the stars and the elements which are their natural begetters."

The description of the third influence, the *ens naturale,* or the influences dependent upon the nature of the individual, is more complicated. For man, the microcosm, was the epitome of the macrocosm, and in his nature were to be found in a sense the counterparts of all external influences. As in the external universe the sun, moon and planets have their predestined and determined courses, so the mirocosm has its sun, moon and planets with their predestined courses. As the heavenly bodies could exert some influence on the health and diseases of men, so the corresponding planets of the human organism have similar influences. Thus, as the sun by its light and heat influences all living things, so the heart, the sun of the body, has its determined course and gives light and warmth to the body. To the moon and its influences corresponds the brain in man; similarly, the lungs correspond to Mercury, the liver to Jupiter, the kidneys to Venus, the gall to Mars, etc. Thus the planets have their analogies in the body, and each has its established course and influence, its conjunctions and oppositions. These courses are, according to Para-

[6] As quoted by Cassirer, *op. cit.,* I, p. 207.

celsus, foreordained at birth, and the time is set for their life and activities, as an hourglass is set for a determined time. "For example, a child is born at a certain hour, and is to live according to his *ens naturale* for ten hours, as had been predestined at its creation. Then the courses of its bodily planets will be completed just as if it had lived a hundred years. And the hundred-year man has no different course than the one-hour child, but a slower one. Thus are we to understand what the creation and predestination are in the *ens naturale*. Observe, however, that the other *entia* often interrupt the predestination."[7]

All this is fanciful and fantastic enough. The one fundamental observation underlying the elaborate metaphysical structure seems to be the recognition of the varying endowments of vital energy with which different individuals are provided at birth, and of the fact that not alone upon external influences is the health or illness of individuals dependent.

The fourth influence, the *ens spirituale,* is also treated in quite a fantastic manner as judged from our present point of view, though to a period when witches and sorcerers were tortured and burned, there was probably little in the thought of Paracelsus which might not be plausible enough to his contemporaries.

The *ens spirituale* comprises those influences which affect the body only indirectly by direct action

[7] *Op. fol.*, I, 14, "Paramirum."

upon the spirit (*Geist*). Paracelsus distinguishes between spirit (*Geist*) and soul (*Seele*).

"Take note that there is not comprehended in this *ens spirituale* any devil nor his effects nor his assistance [*Zulendung*], for the devil is no spirit [*Geist*]: an angel also is not a spirit. That is a spirit which is born from our thoughts, without matter, in the living body: that which is born after our death, that is the soul [*Seele*]."[8]

The spirit may suffer from diseases like the body, but it must not be forgotten that when the spirit suffers the body suffers also.

He explains how these spirits may be created by the will of man when he thinks of another person, in waking or in sleeping hours—and the spirits thus engendered may attack the spirits of the person thus selected, and do injury to them and through them to their possessor. On the other hand, the spirit thus assailed may successfully resist and prevail over the attacking spirit, in which case the originator himself will be the sufferer.

In the discussion of this topic Paracelsus manifestly realizes that he is liable to come into dangerous conflict with the Church doctrines, if misunderstood, and warns his readers that they "lay aside the style which is called theological. For not everything is sacred which is called theological, and not everything is holy which theology employs. Also all is not true which he uses who does not understand theology aright."[9]

[8] *Ibid.*, I, 17.

[9] *Ibid.*

This curious attempt to explain the mechanism of the then generally credited occult influence of one person upon another by magic or charms or witchcraft or the evil eye seems strangely foreign to our modern thought, but it is well to remember that such representative thinkers of that time and of later times—as Trithemius, Pico della Mirandola, Agrippa, Melanchthon, Cardanus and Giordano Bruno, were all believers and writers or lecturers upon magical influences.

In the *ens deale* Paracelsus recognizes the influence of the will of God upon the health of men. But instead of accepting the inference that through the offices of the Church is help to be obtained, he emphasizes the idea that God has created the system of nature and that He prefers to work through nature rather than by direct interference. The true physician, therefore, is he who understands the phenomena of nature, and is through that knowledge the agent through whom God acts. This point of view is a dominating thought with Paracelsus and is brought forward continually in many of his works. As God may send illness so He sends the physician at the proper time when the period of the punishment is completed, for naturally only then may the cure be effected.

"When He performs a miracle, He performs it humanly and through mankind; if He effects wonderful cures, He does that through men, and therefore the physician."[10]

[10] *Ibid.*, I, 21*c*.

He admits that there may be two kinds of physicians, those that heal through the faith, and those who heal through their skill in medicine. Not all have sufficiently strong faith, but the end of the period of punishment having arrived, the physician may cure through the art of medicine. Curing by the power of the Christian faith, he explains, moreover cannot apply to the heathen—Turks, Saracens, Jews, etc., but asserts that he teaches the foundations of medicine not only for Christians but for all others as well.

"The physician is the servant of nature, and God is the master of nature."[11]

"But that you may know what the reasons are that God has created medicine and the physician because He is the physician, and yet works through the physician and does not Himself act without a physician, understand this explanation, that such is His mystery that He does not will that the sick shall know that God is the physician, but that the art may have a procedure and a practice, and that man shall not perceive His help in miracles alone, that is, in God Himself, but also in His creatures that they may help through the artist in medicine. and that according to His predestination in its proper time."[12]

"So know then all, that we human beings are born naked and bare, and bring with us neither knowledge nor wisdom, but await the grace of God whatever He may send us. And He gives us noth-

[11] *Ibid.*, I, 22. [12] *Ibid.*, I, 22f.

ing as a free gift but life. Whether we be well or sick, that He commands through nature; teaching us to speak, that He ordains through our parents; and so on, as we grow up, we must learn all things with labor and difficulty, for we possess not the least knowledge. As, then, we must learn, there must be something which is not human that teaches us. For man at first can do nothing. If we then wish to learn, our first foundation is in God, that we acknowledge Him as our God who teaches us and sends us what is needful. And if we consider all things well we find that all things take place through an instrumentality which God has provided at the Creation. Thus God the Father, when He created the heavens and the earth, created them to be an instrumentality through which that should come to us over which our bodies should rule. Thus is man the master of medicine, of the fields, the meadows and the vineyards."[13]

This formal cataloging and characterization of the five *entia* which influence the health of man, by no means adequately present the whole theory of disease entertained by Paracelsus. He also characterizes disease itself as an organism. Troels-Lund well summarizes this theory as follows: "It is not, as the Arabians accepted, something only negative in relation to positive health. It is itself something positive. It is a form of life of its own, a parasite organism, a microcosm. Man is in illness of two natures, has at the same time two bodies in

[13] *Ibid.*, I, 113, "Liber de origine morborum invisibilium."

one and the same. To understand this rightly we must make it clear what that is we call life. Life is always an intimate union of three constituents: Salt, Sulphur, Mercury. So long as life lasts they form an intimate union and are not noticed. But if they begin to separate and to become separately noticeable in pains and burnings, this is disease and it may lead to complete separation: to death. Life is something invisible while its elements are kept together. If life ceases they separate and become visible. You do not understand this? Try it. A tree lives. Cut it into firewood and it dies. When you now burn it, that which burns is Sulphur, that which vaporizes is Mercury, and that which is ashes is Salt. There is nothing more in it. All these three, the combustible, the volatile, the insoluble, are found united in everything living and are separated only when it dies. These three it is which we characterize by the names of Sulphur, Mercury, Salt."[14]

"Disease is a conflict between two invisible forms of life—disease and health, which are both harbored in the same organism. The conflict is carried on everywhere in the body; is felt as heat, cold, discomfort, pain in all regions. The fever, the pain, are not the disease but only expressions of the force, the form, under which the nature of the organism, the inner alchemist, or archæus, or whatever you choose to call the living force within you, seeks to put to flight the disease. The main battle consists

[14] *Op. cit.*, pp. 156f.

in the crisis. If the 'archæus' wins, the disease must dissolve—give way, and be exerted as perspiration, excreta, respiration. If the disease conquers, the organism is dissolved in death."[15]

"Disease itself he viewed as a half spiritual, half corporeal living organism, as a microcosm within the microcosm, as a kind of parasite—with its own life-phenomena and life-processes within the human organism; its healing takes place when nature or medical art succeeds in developing so forceful a vital activity that the parasite is suffocated, that is, the disease is overcome."[16]

Another and more modern phase of thought which is much emphasized by Paracelsus is the curative power which lies in nature herself, independent of all medical assistance.

"That you may understand what it is that heals wounds, for without that knowledge you may not readily recognize the remedy, you must know that the nature of the flesh, of the body, the veins, the bones, has in it an innate force [*mumia*[17]] which heals wounds, thrusts, and such like things. That is to say, the force lying in the bone heals the fracture, the force naturally contained in the flesh heals the flesh. So with every member, it must be understood, each has its healing in itself and

[15] *Ibid.*, p. 159.

[16] R. J. Hartmann, *Theophrast von Hohenheim*, Stuttgart, 1904, p. 90.

[17] *Mumia*, usually meaning mummy or the dead body, Paracelsus uses also in a somewhat mystical sense—as an attractive force which he compares to the influence of the magnet on iron. Cf. *Op. fol.*, II, 313.

thus nature has in every member that which heals the wounded part. Therefore the surgeon should know that it is not he that heals, but the force in the body. If the physician thinks it is he that heals he deceives himself and does not understand his art. But that you may know for what purpose you, the surgeon, exist, learn that it is to provide a shield and protection to nature in the injured part against enemies, so that these external foes may not retard, poison, nor spoil the force of nature, but that it may remain in its vital power and influence by the maintenance of such protection. Therefore he who can protect and take good care of wounds is a good surgeon."[18]

"In nature's battle against disease the physician is but the helper, who furnishes nature with weapons, the apothecary is but the smith who forges them. The business of the physician is therefore to give to nature what she needs for her battle.... Nature is the physician."[19]

These medical theories of Paracelsus were extremely heretical in the eyes of the medical profession of the time. It was not possible for him to have publicly maintained his theories without exciting the opposition of the medical faculties and practitioners. Least of all was that possible in the universities which were the very strongholds of conservatism.

The practice of his profession differed as de-

[18] *Chir. Bücher,* etc., p. 2, "Grosse Wundartzney."

[19] *Ibid.,* p. 207, "Ursprung und Herkommen der Frantzosen."

cidedly as did his theories from the conventional methods of diagnosis and treatment. Having broken with the teachings of the ancient authorities, the young physician had not hesitated to learn from all sources which were open to him in his travels in his own and in foreign lands and his sojourning among all classes of people, the remedies and treatments used by all kinds of healers and the homely remedies in use among the common people. His chemical knowledge and his chemical theories of the nature of vegetable or mineral substances in their relation to the nature of man doubtless suggested new ideas, and these he tested by observation and experience. To what extent these new methods were original with him, and to what extent accumulated during his wanderings in foreign lands or among the villages of Germany or Switzerland, it is not possible to state. Certain it is that many of the remedies and treatments he used and taught were new to the medical literature of his time. The complex syrups and decoctions of rare and costly herbs he rejected, and taught instead that the true aim of chemist and physician was to separate from medicinal raw materials their effective principles, spirits, or *arcana,* by the application of chemical processes. In this line of work he set the example of using, instead of the complicated and irrational mixtures of the medieval pharmacopœia, simpler extracts and purer medicinal preparations, both mineral and vegetable.

DEFIANCE TO MEDICAL FACULTY AND PROFESSION.

UPON entrance into his office of university lecturer upon medicine at the University of Basel, Paracelsus made no secret of his wide divergence from the accepted doctrines and practice of the established school. On the contrary, he promptly declared war upon the ancient authorities and upon the prevalent theories and practice of medicine.

Naturally also the faculties and profession were indignant and opposition and antagonism soon developed. After a few weeks it appears that his lectures were interfered with and interrupted. The medical faculty invoked a statute, not consistently observed previously however, that any newly arrived physician should, before being admitted to practice, within two months receive the approbation of the medical faculty. They also questioned his title of Doctor of Medicine and demanded that he be required to appear and defend his right to the title. To these attacks Paracelsus replied by an appeal to the city authorities by whom he had been appointed, that they maintain their authority by supporting his position under the conditions by which he held his position. He also requested that

they use their authority to put an end to the persecutions by his opponents. The City Council seems to have sustained his contentions, and in the June following (1527) he had printed and posted the formal Latin announcement of his courses in medicine. In this program he stated plainly that he should not teach the ancient books, but should teach the art of medicine according to his knowledge of nature, and his long and tried experience. He should teach from his own writings. It was not smooth talking nor the knowledge of many languages that made the physician, nor the reading of many books, but the knowledge of things and of their hidden powers. It was the business of the physician to know the varieties of diseases, their causes and symptoms and to employ the right remedies with insight and with industry. Those who were willing to be led by him into these new paths should come to Basel. "He only may judge who has heard Theophrastus."[1]

These and similar statements in his program were not calculated to make his Galenic antagonists more friendly, but these were not his only offenses. Contrary to all academic observance and tradition, Paracelsus lectured in the common German tongue.[2] Though Luther was then preaching in German, and though others had preached even in Basel in the vernacular, and his colleague and supporter Œcolampadius had introduced the singing of German instead of Latin hymns into his church service, never

[1] Cf. R. J. Hartmann, *Theophrast von Hohenheim*, pp. 50f.

[2] *Ibid.*, pp. 43f.

yet had a university teacher ventured to lecture in any other than the customary Latin language. This was another scandal and an insult not to be forgiven.

An early termination of his academic career was inevitable, and was, indeed, not long delayed. Opposition to his teachings and to his tenure of the professorship became more intense. It appears that his lectures were largely attended not only by qualified medical students but by many others less formally schooled, to whom his lectures in the common language opened the door. It is also doubtless true that Paracelsus, realizing that among the conventionally trained medical students he should meet with more hostility than appreciation, counted upon reaching by this means, a larger and more sympathetic constituency.

Constantly irritated by the evidences of hostility and contempt which the medical faculty and their sympathizers among students and citizens exhibited, Paracelsus evidently retaliated in his lectures by bitter retorts and expressions of defiance and contempt for the doctrines, dogmas and practice of his adversaries. He even went so far as to emphasize his breach with traditional authorities by throwing into the students' bonfire on St. John's Day celebration, that most revered authority of the medical teaching of that time, the *Canon* of Avicenna.

This was flagrant defiance and open insult to the most sacred traditions of the established school. To the medical world it was much like the burning of

the papal bull by Martin Luther to the Roman Catholic world of that day. We may perhaps better realize the significance of the act if we recall that a generation later (1559), in England, a Dr. Gaynes was cited before the College of Physicians and Surgeons for impugning the infallibility of Galen, and only upon acknowledgment of error and humble recantation signed with his own hand was he readmitted to standing.[3]

One episode of the petty persecutions of his antagonists evidently excited the irritable physician and wounded his pride in the highest degree, as later allusions in his own writings evidence sufficiently. There appeared one Sunday, posted at the church doors or other public places, copies of Latin verses addressed to "Theophrastus or better Cacophrastus," purporting to come from the shade of Galen in the lower regions—*ex inferis*—attacking and ridiculing Theophrastus and his teachings.

This anonymous and public attack enraged the already irritated and abused physician beyond endurance.

He addressed a strong appeal to the Council of the City, complaining of his treatment and demanding that they take measures to seek out and appropriately punish the culprits, whom he believed to be among his hearers, attending his lectures for the purpose of abusing him. If the authorities cannot satisfy his petition, and should such attacks be repeated, he must not be blamed for no longer en-

[3] Cf. *Chambers' Encyclopedia*, 1st ed., art. "Galenus."

PARACELSUS WITH A BOON COMPANION.

Painted by an unknown artist, about half a century after Paracelsus's death, when the struggle between enemies and adherents of Paracelsus was at its height. The intention to stigmatize Paracelsus as a charlatan is plain. Original in the Imperial Gallery at Vienna.

during them, or if he should in anger take unwarranted action.

It does not appear that the Council took any decisive action upon this request, and the episode served to intensify the animosity entertained by Paracelsus toward the university faculties and profession, and evidently directly stimulated some of the most violent attacks to be found in his writings.

While still irritated and rankling under the sense of abuse and injustice, there occurred an incident which brought the academic career of Paracelsus and his residence in Basel to a sudden termination.

A prominent and wealthy citizen of Basel, Canon Lichtenfels, was suffering from a painful and obstinate illness, and failing to receive relief at the hands of his physicians had offered a hundred guldens for any cure. Eventually Paracelsus was called in. Through his ministration relief being quickly obtained, the physician claimed the promised reward. The Canon, however, having recovered his health and mental equilibrium, declined to pay the large sum offered, sending him six guldens and a letter of thanks and appreciation.

Paracelsus thereupon brought suit for the amount promised. The court, however, decided against him. In his irritation he is said to have denounced the action of the judges in such terms as to make himself liable to severe punishment. Warned of the danger by friends, he left Basel over night—never to return to that city which he had entered with such high hopes and enthusiasm, and

which he left in disappointment and bitterness of spirit.

Paracelsus had begun his work in Basel in the fall of 1526 and his sudden departure took place probably in February, 1528, a brief career as university teacher but for Paracelsus a momentous one.

The indignation he felt toward his adversaries finds expression in its most violent form in the *Paragranum* and particularly in the Introduction to that work. The work itself is a brief formulation of his theory of the foundations of medical science. The sense of injury, and the bitterness of his disillusionment at the disastrous finish of his academic career finds vent in a caustic and vigorous attack upon the orthodox profession—sometimes reaching a rude eloquence, sometimes breaking out into boastful predictions or into coarse abuse. That this work was not printed during his life enabled it perhaps to preserve a characteristic flavor which it might have, to some extent, lost if he had himself published it, as in certain other cases we know that he carefully revised the first drafts of communications which he had written under the stress of strong feeling. The following quotation will serve to convey some idea of its style and content:

"That they are angry at me because I write otherwise than is contained in their authors, results not from mine but from their ignorance, for I, as my writings prove, am not outside of but well grounded in the foundation of medicine and in the proper May-time the evidence will come forth. That

they grumble at such timely writings does not result from slight causes: — for no one cries out unless hurt, no one is hurt unless sensitive, no one is sensitive unless transitory and not permanent. These men cry out because their art is fragile and perishable. Now, nothing cries out unless it be perishable, and therefore they are perishable and therefore they cry out against me. The art of medicine does not cry out against me, for it is imperishable and so established upon immortal foundations that heaven and earth shall pass away before the art of medicine shall perish. If, then, the art of medicine leaves me at peace, why should I let myself be disturbed by the crying of these perishable physicians. They only cry because I defeat and wound them:—that is a sign that they lie sick in the arts of medicine:— their disease is their battle against me, which they do not like to have discovered and made manifest."[4]

"Their highest ones are opposed to me because I do not come from their schools nor write according to them. Should I write thus, I could not escape the blame of falsehood, for the writings of the ancients prove themselves false. Who, then, can be born from them without falseness. . . .

"Now if I am to present my case in opposition to these, I must claim for myself that upon which the art of medicine rests, in order that it may be generally recognized whether I am entitled to speak or not. And I place the foundation upon which I stand and from which I write, upon four pillars: upon

[4] *Op. fol.*, I, 198, "Paragranum."

Philosophy, upon Astronomy, upon Alchemy, upon Virtue. Upon these four will I stand and await any antagonists, and see whether from outside of these four, any physician will stand against me. Despisers are they of philosophy, despisers of astronomy, despisers of alchemy, despisers of virtue—how, then, can they remain undespised by the sick when they despise that which gives to the sick the art of medicine, for with what measure they mete it will be measured to them again and their works bring them to shame. Christ was the foundation of blessedness, and for that he was despised, but the real contempt fell upon his contemners so that neither they nor Jerusalem survived. . . And take notice, either you too must accept and recognize these four pillars, or it will become manifest to the peasants in the villages that your art of medicine is only for deceiving princes and lords, cities and countries, and that your art possesses neither knowledge nor truth, and the chastisement which you are receiving rightly comes to you, ye fools and hypocrites, that is to say, ye so-called physicians. As I claim these four pillars for myself, so must you accept them and must follow after me—not I after you—Ye after me, Avicenna, Galen, Rhasis, Montagnana, Mesue, etc. After me and not I after you—Ye of Paris, ye of Montpellier, ye of Swabia, ye of Meissen, ye of Cologne, ye of Vienna, and those who are on the Danube and the Rhine, ye islands of the sea,—thou Italia, thou Dalmatia, thou Athens, thou Greece, thou Arabia, thou Israelita, after me and not I after

WILHELM VON BOMBAST, FATHER OF PARACELSUS.
Oil-painting, original in Salzburg. Artist unknown.

PARACELSUS.

After a life-size oil-painting in the State Gallery at Schleissheim near Munich. Artist and date uncertain. Has been attributed to Hans Baldung (ca. 1470-1552).

you,—there will none of you remain in the furthest corner on whom the dogs will not. . . . : I shall be monarch and mine will be the monarchy."[5]

"This is certain, that the restoring to health is what makes a physician,—their work it is that makes the Master and the Doctor,—not the Emperor, not the Pope, not the Faculty, not the *privilegia,* nor any university, for from them is hidden that which makes the physician. Therefore they depend only upon outward appearances that they may be somewhat seen. There has never any physician been born from the universities nor has any one been able there to learn with knowledge of the truth the cause of the least malady."[6]

"Ye are of the serpent kind and hence I must expect only poison from you. With what scorn have you placarded me as the Luther of Physicians, with the explanation that I am an arch-heretic. I am Theophrastus and greater than those to whom you liken me. I am Theophrastus and am moreover Monarch of Physicians, and can prove that which you cannot prove. I will let Luther answer for his own affairs and I will take care of mine and will surpass every one who attacks me,—the Arcana will help me to that. Who are enemies of Luther? The same crowd hates me also, and what you, for your part, wish for him so you wish for me, that is, to the fire.

"The stars did not make me a physician—God made me; it is not for the stars to make physicians,

[5] *Ibid.*, I, 199. [6] *Ibid.*, I, 201*c*.

that is a work of God, not of the stars. I may well rejoice that rascals are my enemies—for the truth has no enemies but liars. . . . I need lay on no armor against you—no corselet, for you are not so learned nor experienced that you can disprove my least letter. Could I protect my bald head from the flies as easily as I can my monarchy, and were Milan as safe from its enemies as I from you, neither Swiss nor foot-soldiers could gain entrance."[7]

The work *Paragranum* as well as the Preface from which the above extracts are taken contains many similar attacks upon his antagonists, some of them indeed couched in language which will not bear translation. Even admitting what he has himself claimed that in such assaults he is but replying in kind to similar attacks upon him, it is evident that these outbursts of indignation, however justified they may have been, nevertheless were not calculated to appeal to thoughtful men whether friendly to his campaign or otherwise. On the other hand, it should be said that these utterances as found in the *Paragranum* represent an extreme of bitterness and lack of restraint which is not characteristic of the great mass of the work of Paracelsus. At a later period of his life, Hohenheim thus refers to his own blunt style of writing: "My style pleases me very well. In order to offer a defense for my strange fashion and how it is to be understood, know this,—by nature I am not woven fine—it is not the fashion of my land that one attains anything by

[7] *Ibid.*, I, 202.

spinning silk. Nor are we reared on figs or mead or wheaten bread, but on cheese, milk and oaten bread. That does not make subtle fellows."[8]

At a later time of his life, in the Preface to his influential work *The Greater Surgery* (1536), prepared and published under his personal supervision, he has given us a summary of his experience in the study of medicine and of the motives which largely influenced him in his career. The fact that he personally supervised the printing of this work lends particular interest to the passage.

"I have always," he says, "applied myself with great attention and industry to learn the foundations of medicine, whether it could properly be called an art or no, or what there is in it. I was impelled by many reasons to do this: namely by the uncertainty of its procedure, and that so little reputation and honor have appeared to come from its practice; that so many sick have been ruined, killed, crippled and even abandoned, not in one disease only but in nearly all diseases. So uncertain was it that, in my time, there has been no physician who could even cure a toothache with certainty, to say nothing of more severe illnesses. Also with the ancient authors, such folly is found in their writings. And we see, moreover, how great cities and rich persons offer large sums, and are yet abandoned in their need by the physicians, who nevertheless go about in silks, golden rings, etc., with no little reputation, display and idle babble. I have several times decided to

[8] *Op. fol.*, I, 261, "Die sechste Defension."

abandon this art. For the reason that no one seemed certain of anything, that it was a collection of fables and a honeyed device for attracting pennies; that it was an art founded on credulity, so that if one should chance to hit upon the day of recovery he could then attribute (though unjustly) the credit to his art, to which it did not belong. I have often quitted the art, and unwillingly practised it.

"And yet in this matter I have not quite followed my convictions, but have acted with my usual simple-mindedness. I therefore attended the universities for many years, in Germany, in Italy and France, and sought the foundations of medicine, and was not only anxious to devote myself to their doctrines, books and writings, but I wandered further — to Granada, to Lisbon, through Spain, through England, through the Mark [Brandenburg], through Prussia, Lithuania, Poland, Hungary, Wallachia, Transylvania, Croatia, the Wendian Mark [i. e., Lusatia, now a part of Prussia and Saxony], as also other countries not necessary to enumerate. And in all corners and places I industriously and diligently questioned and sought for the true and experienced arts of medicine. And not alone with the doctors; but also with barbers, surgeons, learned physicians, women, magicians who practise that art; with alchemists; in the cloisters; with the noble and the common, with the wise and the simple. But even then I could not learn to be fundamentally certain —no matter what disease it might be. I pondered over it much—that medicine was an uncertain art

not honorably to be followed, an unfair art to be hit upon by chance;—for one that was cured, ten are ruined. It caused me to think that it was a deception by spirits to mislead men and to degrade them. I again abandoned the art and went into other business. But yet again was driven back to it. But then I discovered this saying of Christ, 'The whole need not a physician, but the sick.' This impressed me so much that I had to substitute another view of the matter; that according to the meaning of the saying of Christ, the art of medicine is true, just, certain, perfect and whole, and that in it neither deception by spirits, nor fortune was to blame, but that it was an art proven in need, useful to all sick and leading to health. When I accepted this and adopted it for my own, it was necessary that I should consider what that medical art was that I had learned from books and from others, and I found this much, that no one of them had known the foundation of the art, nor had had experience in it, nor understood it, and that they had gone (and still go) around the art of medicine like a cat around the [hot] porridge; that they were teaching that which they themselves did not know, that they did not understand their own disputations, that they visited and advised the sick, but understood neither the disease nor the art of curing. Therefore the fault was alone in those who practised the art.—There was, and is, so much idle talk: mountebanks and chatterers were they in their display and pomp, and there was nothing in them but a tomb which outwardly

is beautiful but inwardly a stinking and corrupt mass, full of worms. For such reasons I was forced to seek further—to stop reading the above-mentioned evil lies, and to seek for another foundation [of medicine] which should be unspotted by such fables and babble; and first in the surgery of wounds which in my experience thus far is the most certain. What experience I have had therein follows later."[9]

[9] *Chir. Bücher,* etc., "Grosse Wundartzney," Preface.

AS A REFORMER IN MEDICINE.

WHATEVER be the final judgment as to the relative importance of Paracelsus in the upbuilding of medical science and practice, it must be recognized that he entered upon his career at Basel with the zeal and the self-assurance of one who believed himself inspired with a great truth, and destined to effect a great advance in the science and practice of medicine. By nature he was a keen and open-minded observer of whatever came under his observation, though probably also not a very critical analyst of the observed phenomena. He was evidently an unusually self-reliant and independent thinker, though the degree of originality in his thought may be a matter of legitimate differences of opinion. Certainly once having from whatever combination of influences made up his mind to reject the sacredness of the authority of Aristotle, Galen and Avicenna, and having found what to his mind was a satisfactory substitute for the ancient dogmas in his own modification of the neo-Platonic philosophy, he did not hesitate to burn his ships behind him. Having cut loose from the dominant Galenism of his time, he determined to preach and teach that the basis of the medical science

of the future should be the study of nature, observation of the patient, experiment and experience, and not the infallible dogmas of authors long dead.

Doubtless in the pride and self-confidence of his youthful enthusiasm he did not rightly estimate the tremendous force of conservatism against which he directed his assaults. If so, his experience in Basel surely undeceived him. From that time on he was to be a wanderer again, sometimes in great poverty, sometimes in moderate comfort, but manifestly disillusioned as to the immediate success of his campaign though never in doubt as to its ultimate success—for to his mind his new theories and practice of medicine were at one with the forces of nature, which were the expression of God's will, and eventually they must prevail.

Paracelsus was about thirty-four years of age when he left Basel, and from that time on for the remaining thirteen or fourteen years of his life, he seems to have devoted himself with a wonderful tenacity of purpose and with great energy and industry, against opposition and discouragements of great magnitude, to the establishment of his medical system, to the explanation of the phenomena of nature in terms of his philosophy—to assailing the authority of ancient and venerated dogmas, and to denouncing the corruption, ignorance, venality and hypocrisy of the medical profession of his day.

It is evident that during his sojourn in Basel, or perhaps even earlier, a profound influence had come into the life and thought of Paracelsus through con-

tact and sympathy with the spirit of revolt against the corruptions and observances of the Roman Catholic Church. Luther's translation of the New Testament was printed at Wittenberg in 1522, and in 1530 Zwingli and Leo Judah published their German translation of the Bible, some four years before Luther's complete Bible was published. His acquaintance in Basel with Erasmus and Œcolampadius, both prominent in the thought of the Reformation period, doubtless also served to influence him. The revolt against traditional authorities in the Church doubtless appealed to the man who was battling against similarly entrenched authorities in medicine.

Certainly Paracelsus was thoroughly familiar with the New Testament in the vernacular, and was deeply influenced by its spirit. While sympathetic with the Protestant revolt against the corruptions of the medieval Church, with characteristic independence he condemned alike the Papacy, Lutheranism, Zwingliism as equally foreign to the spirit of the teachings of Christ—which to his mind constituted the true catholic Church—and whose complete and all-sufficient doctrines were for him to be found in the New Testament. For the interpretation of these doctrines he looked neither to Pope nor the Fathers, nor to Luther or Zwingli—just as for the interpretation of the art of medicine he did not depend on Galen, or Avicenna, or university faculties.

As we follow the story of the lifelong struggle of Paracelsus against the centuries-old conservatism

opposed to him, it is impossible not to feel great sympathy not only for the cause for which he labored but also for the self-sacrificing devotion and tremendous earnestness which he brought to his work.

We can realize now at this distance that the condition of medical science and teaching was in his day at a very low ebb. Improvement was indeed hopeless so long as dogmas held as infallible inhibited all initiative toward rational criticism or new experiment. We can see that the insistence of Paracelsus upon the study of the patients and their diseases rather than of ancient books, his emphasis upon the value of experiments, upon the application of chemistry to the understanding of physiology and pharmacology, his own radical innovations in the use of new and unauthorized remedies, and his denunciations of the hollowness of much of the medical practice and teaching of his time,—that these were all working in the direction of progress.

Realizing this, we can make allowance for his crudities, his limited understanding of the goal toward which his labors tended, his superstitions, his pseudo-science. We can sympathize with this lonely figure battling throughout his life to break the chains which held medical science enslaved, seeing the path which must be followed to build that science upon surer foundations—yet himself too much hampered by the medieval point of view, too little versed in the methods of modern science to

clearly lead the way toward the goal he struggled to attain.

But though we recognize the importance of the work of Paracelsus, while we admire the earnestness and essential sincerity of his reform campaign, we should be unfair to his opponents of the conservative school of medicine, if we failed to recognize the shortcomings of Paracelsus which were in part responsible for the lack of appreciation and of following which he could command during his life. Modern historians of medicine, while recognizing the importance and the essential sincerity of the work of Paracelsus have not been blind to these shortcomings. Thus Professor Wunderlich:[1]

"It is not to be doubted that a man who, following his own spontaneous reflections, dared to break frankly and decisively with a spiritual domination of fifteen hundred years' standing, must have been a man of great self-confidence and energy. It is just as certain that Paracelsus possessed sufficient acuteness to see through the corruption of current practice and theory, and that his polemics against them gives evidence as well of rare power as of indisputable talent. But it is also not to be denied that he was materially supported and encouraged in his destructive work by the spirit of the time, and that numerous others with him and even before him had equal insight into the necessity of reform of the science and presented the demand for it, though not with the violence of Paracelsus. . . . It may be

[1] *Geschichte der Medizin*, Stuttgart, 1859, p. 97.

accepted that Paracelsus did not intentionally violate the obligations of honest conviction; he was manifestly thoroughly imbued with that which he taught, and when he plunges into confusions and absurdities, it must be admitted that it is chiefly only his unclear thinking and an unfortunate mode of expression that disturbs his ideas. . . . We have no right to accuse him of intentional mystifications, but he lacked in any solid positive knowledge. . . . The demands of logical argumentation are totally unknown to him. . . . Superstitious prejudices control him, completely obscure and corrupt his ideas and are at all points confused with them. It must be admitted that many of his ideas are of magnificent conception and in advance of his time."

Dr. Jos. Bauer[2] thus summarizes the reform influence of Paracelsus:

"In order to infuse new life into the sluggish and torpid mass of science, there was needed a giant spirit, who with strong hand, regardless of authority and dogma, should seize the reins, and undisturbed by the judgment of his time should understand how to sweep away the accumulated dross. All these qualities the reformer Hohenheim possessed in the highest degree, and he ennobled these gifts by an unselfish honest spirit, though his inclination to extravagances drove him into a fanaticism which amounted to a complete autocracy in the domain of opinions. In order to maintain these

[2] *Geschichte der Aderlässe,* Munich, 1870, p. 146.

he trod underfoot the bounds of propriety and in that way alienated the sympathy of calm thinkers."

The medical system of Paracelsus was not adapted, in Dr. Bauer's opinion, to influence the physicians of his time, and his ideas were carried forward by a relatively small number of followers—often visionaries, and whose extravagances often did much to discredit his thought. So also Häser,[3] while acknowledging the great value of the services of Paracelsus to medicine, the purity of his enthusiasm and his earnestness, nevertheless recognizes that the methods he used to attain his aims in the science were mistaken.

"This contempt for the foundation of scientific medicine," says Häser, referring to Paracelsus's sweeping rejection of the importance of anatomy as a foundation of medicine, "is in all times the symbol of all transcendental as well as of all empirical systems. . . . With Paracelsus this undervaluation goes so far that he only uses the word 'anatomy' to denote that which in his opinion should form the foundation of medicine, the knowledge of the nature of life."[4] "Above all he manifests the strong love of freedom native to the German and Swiss stock. 'No one can be another's who can be his own.' This native self-consciousness was as with Luther, with whom he had much in common that is good, and with John Brown, with whom he had much in common that is bad, nourished by the fact that he was

[3] *Lehrbuch der Geschichte der Medizin*, 3d ed., Jena, 1875-82.

[4] *Op. cit.*, Vol. II, p. 91.

lowly in origin, was born and lived in poverty, and that a rude bringing-up separated him from the finer manners of the cultivated classes. The neglect and slight which he experienced insulted his pride and drove him back into himself. By blameworthy or unblameworthy misfortunes he arrived at that arrogant disdain so peculiar to strong but unbending natures, through premeditated contempt for the great accomplishments of his contemporaries to overestimation of his own power and his own accomplishments."[5]

One of the later writers upon the place of Paracelsus in the history of medicine, Dr. Hugo Magnus,[6] after commenting upon the condition of medical science of the time for which the dictum attributed to Rhazes might well have served as a motto, "The study of a thousand books is more important for the physician than seeing a thousand patients," says, "That our hero soon felt the lamentable condition of his science gives very certain evidence of a sound and lively critical sense in matters medical. And that he soon gave expression to this dissatisfaction in powerful attacks upon the corrupt conditions must insure him at all events our sympathy. This fact alone, that Theophrastus Bombastus declared war to the knife upon the scholastic degenerate medicine, will assure him our gratitude and an honorable place in the history of the healing art."

Dr. Magnus emphasizes that Paracelsus was

[5] *Ibid.*, p. 87.

[6] *Paracelsus der Ueberarzt*, Breslau, 1906, p. 3.

himself nevertheless possessed of a medieval point of view, that he attacked his problems and mission not by modern scientific methods but with the same kind of reasoning as was used by nearly all his predecessors and contemporaries, only he discarded the conventional medievalism and sought to substitute a similarly unreal and fantastic natural philosophy of his own based upon neo-Platonism.

"For Theophrastus invented no new weapons but sought to achieve the highest knowledge with just the same equipment which mankind had used up to his time. He thought to discover the secrets of life, of existence and growth, by bold fantastic speculations, just as nearly all natural philosophers and physicians up to his time had hoped to do. So he stands, an embodiment of the conflict which rationalism has waged over the knowledge of nature, at the threshold of the new age — that age which attempts to tear from life its secrets not by speculation, but by observation, investigation and experiment. Vesalius set himself to the task to bring this new era into the world just as Paracelsus, the last romanticist in the struggle over the riddle of life, lowered his blunted weapons and, poor in knowledge, closed forever his tired eyes."[7]

In these estimates of not inappreciative nor unfriendly authorities, we may understand why it was that during his lifetime, Paracelsus seemed to have so little support among the physicians of his day. It

[7] *Ibid.*, pp. 14f.

is not perhaps too much to say that the doctrines which he asserted and opposed to the accepted dogmatic medicine owed much of their present interest to certain truths contained in them which were rather intuitively apprehended than clearly conceived by Paracelsus himself. As knowledge grew and facts developed, these foreshadowings which the vision of the Swiss physician perceived rather than demonstrated, gained in authority and respect. It required a later experience to comprehend how much of brilliant suggestion, and prevision of the future methods of science were contained in the thought of Paracelsus.

So while we accord Paracelsus our full sympathy in his unequal battle, we should not misjudge nor too severely condemn the conservative profession of his day,—that they did not recognize in him a true prophet of medical progress, but rejected him as a dangerous heretic and mischievous agitator.

Nor, on the other hand, need we be surprised that his native force, eloquence, and the logic and reasonableness of much of his teaching — indeed perhaps even the very imaginative and mystical philosophy by which he sought to formulate his theories of medicine—should have had a gradually increasing influence, so that in spite of the fact that during his lifetime he had few friends and supporters, yet after his death, and as his many writings found their way into print, his work laid the foundation for a very material victory for many of the aims for which he had fought.

Especially it should not be forgotten that, though he seemed to struggle in vain against overwhelming odds during his lifetime—that nevertheless he was largely, if not indeed mainly, instrumental in shattering the confidence of a coming generation in the sacredness and sufficiency of the ancient Greek and Arabian authorities. The remarkable vogue which his writings enjoyed when they were finally printed, the violent conflicts that arose in the profession over the theories and practice he advanced, and which resulted in many victories for the Paracelsans even in the universities, the strongholds of medical conservatism: all evidence that there was great vitality and influence in the ideas of Paracelsus.

The contributions of Paracelsus to medical science, and his efforts to instil into students and practitioners of medicine higher ideals of the mission and duty of the physician will be considered more in detail in later chapters. But first let us briefly estimate his place and influence as chemist.

THE CHEMIST AND REFORMER OF CHEMISTRY.

AS previously mentioned, Paracelsus was in youth and early manhood a student of the chemical processes and theories prevalent in his time—particularly experienced in the operations of mining and metallurgy of the region in which his early life was spent. To this experience he evidently added by study of the principal authorities upon alchemical knowledge of the time, as references or allusions to them are to be found in his own writings.

The chemists of the period were of two classes: artisans employed in the mines or the working of metals, in pottery, glass, dyeing or similar industries; or mystics striving by obscure and occult means to transmute the baser metals into gold or silver, or to discover the elixir that should prolong life or endow its possessor with perennial youth.

The practical chemists or the artisans in chemical industry were in the early decades of book-printing not addicted to publishing. Their trade recipes and manuals doubtless were in use in the form of manuscripts for their own use but not usually issued for public information. The important pioneer authors in technical chemistry, Birin-

guccio, George Agricola, Bernard Palissy, were also of the period of Paracelsus, though their works important to the history of chemical science did not appear in print until after the death of Paracelsus.

The principal chemical authorities extant during his life were the early Greek philosophers, of whose works Pliny was the most important compiler, and the works written by or attributed to—for many were apocryphal—the Arabians Gheber and Avicenna, the Spaniard (?) Arnaldus de Villanova, the German Albertus Magnus, the Englishman Roger Bacon, and the Spaniard Raimundus Lullus (or Lully).

As far as the chemical knowledge contained in these authors is concerned, it appears from the studies of M. Berthelot that they contained very little not known to Egyptian or Greek writers of the early centuries of our era. The metaphysical philosophy and mysticism of later Greek and Egyptian chemistry had, however, from Chaldean, Arabian and other Oriental sources been added to and elaborated to such a degree that the chemical writings of the above authors or those written under their names were fantastic, obscure and often intentionally incomprehensible.

It is evident from the writings of Paracelsus that he was familiar with the chemical processes in use in the mines and metallurgical laboratories of the country in which he lived. His knowledge of the chemistry of his time was extensive and well assimilated. It is also evident that he was familiar

with and influenced by the often fantastic speculative theories of Lullus, Arnaldus de Villanova and others respecting the nature of matter and the origins of metals.

Paracelsus wrote no treatises devoted exclusively to chemistry or alchemy. The few which appeared under his name and which answer such description were forgeries—as judged both by internal evidence and by the evidence of Huser, who, while including them in his collection because they had been so published, characterized them as apocryphal.

Nevertheless, in his other writings upon medicine, surgery or natural philosophy, he includes much chemistry, particularly in the books entitled *De mineralibus, De natura rerum, Archidoxa.* In this unsystematically arranged and scattered material are recorded many facts not found in earlier writings, and operations more clearly described than previously. One historically important theory, that of the three elements (*tria prima*)—Sulphur, Mercury and Salt—as constituting principles of all other substances, seems to have been original with him. though using earlier speculations as material for its development.

Historians of chemistry have generally recognized the important influence of Paracelsus upon the development of chemical science in emphasizing its importance to medicine and pharmacology.

Strangely enough, however, it was just in relation to this, his most certain influence upon the de-

velopment of natural science that his reputation for knowledge, originality, and indeed for honesty, was called in question for more than two centuries. The occasion for this was the appearance of some clever literary forgeries which appeared to place Paracelsus in the position of a plagiarist and to deprive him of his claim as an initiator of the era of chemical medicine. Huser's collection of the philosophical and medical works of Paracelsus, which included, to be sure, much of doubtful or spurious origin, appeared in 1589-1591.

About ten years later there began to appear a series of treatises by an alleged Benedictine monk —Basilius Valentinus. The publisher of these or at least of the earlier ones was a certain Johann Thölde. Thölde claimed to have discovered and translated into German the Latin manuscript. These works, especially the *Triumphal Chariot of Antimony,* attracted immediate and wide-spread attention because of their real chemical importance at the time. The work mentioned was a real contribution to the chemistry of antimony compounds. The inference from the text was that they were written early in the fifteenth century, therefore a century before Paracelsus.

As the appearance of this work occurred during the period of the greatest popularity of the works of Paracelsus, it was soon noticed that there was a remarkable similarity both in matter and form of presentation between much contained in Basil Valentine and in Paracelsus. Like Paracelsus, Basil

Valentine had abused the physicians and their authorities; the mineral remedies used by Paracelsus were here also advocated. Even the three primary principles Sulphur, Mercury, Salt were found in Basil Valentine. The chemical facts were often more clearly described than in Paracelsus. In short, it was evident to critical minds that a plagiarism existed. To be sure, no previous writer had ever mentioned or quoted a Basil Valentine. Nor in fact were the alleged original manuscripts placed in evidence. Paracelsus, if he were the plagiarist, must then have had a monopoly in his access to the works of Basilius. There were indeed writers of the period who expressed disbelief in the authenticity of the find. Generally, however, these came to be accepted as genuine.

From certain passages in the writings, however, it became evident that they could not have been written as early in the fifteenth century as alleged by the supposed author, for allusions to metal used in type-founding, and to the French disease, made it plain that their date could not be earlier than the end of the fifteenth century. Nevertheless, it became quite generally accepted that there had existed a writer who wrote under the name of Basilius Valentinus (though no record of such a name could be found in the register of Benedictines), that he lived before Paracelsus, and that therefore Paracelsus had stolen his chemistry largely from the supposed monk. It may seem strange that such an hypothesis became so easily accepted, but it should be noted

that at the time a fierce warfare was in progress between the conservative medical profession and the university faculties on the one side, and the rapidly increasing revolutionary party of the Paracelsan school, on the other.

Paracelsus with the more influential and generally more scholarly classes was a name despised and hated. Plagiarism was to be expected from the leader and founder of the new school with its vagaries, fantasies and charlatanry. Against this presumption the champions of Paracelsus fought at a disadvantage. Eventually also certain statements crept into literature which seemed to confirm the facts of the existence of the alleged Basilius, and so history finally accepted him as a writer previous to Paracelsus. The reinvestigation of this problem may be said to have commenced with the eminent historian of chemistry H. Kopp, who, beginning by accepting the conventional hypothesis, after half a century's work in the early history of chemistry ended by stating that in his judgment the Basilius Valentinus literature was a forgery or series of forgeries of the beginning of the seventeenth century, and that in all probability Thölde the publisher was himself the author.[1]

Since Kopp's time, other competent students have contributed to the solution of the problem—Sudhoff, Ferguson, Lasswitz, and it may now be accepted as certain that no writings under the name of Basilius Valentinus had appeared nor existed

[1] H. Kopp, *Die Alchemie*, Heidelberg, 1885, pp. 29f.

either before or during the lifetime of Paracelsus nor indeed prior to the printing of his collected works. The works published and presumably written by Thölde therefore drew not only from Paracelsus but doubtless also from Agricola and perhaps from still later writers.[2]

The works of two other alleged authors upon chemistry, Joh. and Isaac Hollandus, have also been shown to be post-Paracelsan and were literary forgeries of about the same period as the Basilius literature.

By the relegation of these writings to their true period, the relative importance of the chemical literature of Paracelsus is greatly enhanced. It is to him that we must turn for the initiative to medical chemistry as well as for its propaganda; to him also the credit is due for the first announcement of many interesting though by no means epoch-making chemical facts. Through this revision of history also Paracelsus is freed from the odium of plagiarism and consequent lack of originality which in the minds of the majority of medical or chemical students has so long attached to him.

The interest of Paracelsus in chemistry was on the whole practical, though his adopted philosophy and the need he felt to replace the Galenic and Aris-

[2] For a more detailed account of the Basil Valentine forgery cf. Stillman, *Popular Science Monthly*, December, 1912, "Basil Valentime." A communication from the eminent historian of early medicine and student of Paracelsus literature, Dr. Karl Sudhoff, to the writer in Jan., 1913, states that after looking through many thousands of medieval manuscripts in recent decades, there is absolutely no doubt possible that nothing like Basil Valentine or Joh. and Is. Hollandus existed previous to Hohenheim.

totelian theories by new ones leads him often into theorizing. And to some extent these theories doubtless influenced his practice. Thus in the preparation and purification of his *arcana* or simple extracts or principles of plants and minerals, he seems to have followed as a working hypothesis, his neo-Platonic concept of the spiritual sympathetic relations of all things in the universe toward man and his health. Thus if he could free the real active spirit or principle of the plant from grosser admixtures, it should be more efficacious. So he rejected the extremely complex decoctions of herbs of the customary pharmacopœia for his simpler *arcana*.

It is by no means necessary to assume that all these new remedies he introduced were originated by him. Many of them were, though not authorized by the faculties, in use as popular remedies in certain localities at least, or used by irregular practitioners.* Thus mercury preparations mixed with fats had been introduced for external use in certain treatments by Italian physicians previous to Paracelsus. It is nevertheless true that in the extension of the pharmacopœia to a great number of preparations requiring the operations and methods of chemistry for their preparation he exerted his greatest influence upon chemical activity and development. Not only mercury and antimony preparations but preparations of lead, arsenic, copper and iron found a

* It is probable that the preparation of medicines by distillation as given in the work on the distillation of simples by J. Brunswyk, Strassburg, 1500, was familiar to Paracelsus. Cf. Stillman, *Scientific Monthly*, 1918, pp. 169f.

place among his remedies, opium also seems to have entered into his practice quite largely, and the word laudanum seems to have originated with him—whether or no his "laudanum" were an opium preparation, as on that point the doctors disagree.

The name of zinc first appears in the writings of Paracelsus, though that he therefore first named it, is not to be inferred. It was probably at least locally in use in mining regions in which he had studied.

"For that is a metal which fire may subdue and which can be made into an instrument by man. Such namely are gold, silver, iron, copper, lead, tin. For these are generally known as metals. Now there are some metals which are not recognized in the writings of the ancient philosophers nor commonly recognized as such and yet are metals; as *Zincken* [zinc], *Kobaltet* [?], which may be hammered and forged in the fire."[3]

"There is also another metal called *Zincken*. . . . This is not generally known, it is in this sense a metal of a special kind and from another seed [i. e., origin]. Yet many metals adulterate [alloy] with it. This metal is itself fusible for it is from three fusible elements [i. e., the three primary elements], but it has no malleability but only fusibility. And its color is different from the colors of others, so that it is not like the other metals as they grow. And it is such a metal that its *ultima materia* is not yet known to me. For it is nearly as strange in its

[3] *Op. fol.*, II, 134, "De mineralibus."

properties as quicksilver. It admits of no admixture and does not endure metallic manufacture, but stands by itself."[4]

Mercury (quicksilver) Paracelsus did not consider a true metal. Though of "metallic nature," it could not be hammered or cast, lacked malleability, but it is of metallic nature because "by chemical art it can be brought to malleability and fashioning" (doubtless meaning in its alloys or amalgams).

The first mention of bismuth is sometimes, though incorrectly, ascribed to Paracelsus, as it is mentioned by Agricola in his *Bermannus,* printed in 1530, and even by a still earlier anonymous writer.[5]

Another observation credited to Paracelsus is the distinction between "alums" and "vitriols" in ascribing to the former an earth as base, and to the latter a metal. This was for that time a logical discrimination, for it was Sir Humphrey Davy who first demonstrated that the so-called "earths" could be reduced to metals hitherto unknown. The term "reduction" (*reduciren*) as applied to the obtaining of metals from their ores is also said to have been first introduced into chemical literature by Paracelsus..

Many other processes not new are described by Paracelsus, and his descriptions are frequently straightforward and with none of the intentional mystification of the great bulk of alchemical writings of the time or of many even in the century fol-

[4] *Ibid.,* II, 137.

[5] Cf. Agricola, *De re metallica* (translated by H. C. and L. H. Hoover), London, 1912, p. 433, n.

lowing. That they are not always intelligible is true, but this is rather from the use of terms whose meaning is not now clear, or from careless and hasty writing or editing. The following is an illustration of his better style. It describes the preparation of white-lead from lead and vinegar and carbon dioxide gas.

"The mortification [from *mors*, death] of lead consists in converting it into *cerussa* which is also called *Bleiweiss* [white-lead]. Its preparation is in two ways, one in medicine, the other in alchemy. Its preparation in medicine is thus—that you hang it [the lead] in thin sheets over a sharp wine-vinegar in a glazed pot. The pot is then well-stoppered so that no spirits may volatilize, and set in warm ashes, or in winter behind the stove: then you will find in ten to fourteen days good white-lead adhering to the sheets, which you may remove with a hare's foot, and again hang the sheets, and do this until you have white-lead enough. The other preparation of white-lead—in alchemy—is like this except that in the vinegar much of the best and finest salmiac is dissolved. That gives a fine and subtle white-lead."[6]

By the first of the two methods mentioned the carbon dioxide gas necessary for the formation of the carbonate must come from the fermentation of the vinegar. This makes a slow process to be sure. In the second process, with the addition of the salmiac, the sal-ammoniac as then prepared often con-

[6] *Op. fol.*, I, 893f, "De natura rerum."

sisted of or contained ammonium carbonate which with the acetic acid of the vinegar liberated carbon dioxide in greater quantity than from the fermentation of the vinegar alone.

With respect to his theoretical views on chemistry, we should naturally expect to find them fanciful and unscientific, and we are not disappointed. They are based upon the theories of his predecessors with such changes as commend themselves to his own preconceptions. Thus he does not deny the possibility of transmutation of the metals. But his practical sense rejects the search for it as a waste of valuable energy otherwise more profitably employed.

"Many have said of alchemy that it is for making gold and silver. But here such is not the aim but to consider only what virtue and power may lie in medicines."[7]

"Not as they say—alchemy is to make gold, make silver: here the purpose is to make *arcana* and to direct them against diseases."[8]

From the point of view of the history of development of ideas in physical or chemical science it is interesting to find that our word *gas* which was first formulated by Van Helmont as a generalization to include the various elastic fluids which we now call by that name, finds its suggestion in Paracelsus.[9] Though suggested by Van Helmont the term gas

[7] *Op. fol.*, I, 149, "Fragmenta medica."

[8] *Op. fol.*, I, 220, "Paragranum."

[9] See Franz Strunz, *J. B. van Helmont*, Leipsic and Vienna, 1907, p. 30, and E. O. von Lippmann, *Chemiker-Zeitung*, XXXIV, p. 1.

was slow in making its way. It will be remembered that the celebrated work of Joseph Priestley in the eighteenth century bore the title of *Different Kinds of Air.* Van Helmont (1577-1644), who was strongly influenced by Paracelsus and one of his strong defenders, though differing from him in his views in many respects, tells us that he derives the word gas from the Greek *chaos.*[10] This term chaos, however, is used repeatedly by Paracelsus as a generalized term for air, and certainly was familiar to so thorough a student of Paracelsus as Van Helmont manifestly was.

Thus Paracelsus says, "And they are born from the elements,. . . . as for instance out of the element *terra* (earth) its species, and out of the element *aqua* (water) its species, out of the element *ignis* (fire) its species, out of the element *chaos* its species."[11]

"Thus all superfluous waters run into their element called the Sea (*mare*); whatever is terrestrial (earthy) returns to its element called Earth (*terra*); what is igneous into the element Fire (*ignis*); and what is aerial (*aëreum*) that runs into its element Chaos."[12]

"The elements in man remain indestructible. As they have come to him, so they come from him. What he has received from the earth goes back to the earth and remains such so long as heaven and

[10] J. B. van Helmont, *Opera Omnia,* Frankfort-on-the-Main, 1682, p. 69 (29).

[11] *Op. fol.,* I, 269, "Labyrinthus medicorum."

[12] *Op. fol.,* I, 291, "Das Buch von den tartarischen Kranckheiten."

earth stand; what he has in him that is water that becomes water again, and no one can prevent it; his *chaos* goes again into the air [*Luft*], his fire to the heat of the sun."[13]

Thus "chaos" used by Paracelsus for air became "gas" to his disciple Van Helmont, though even in Van Helmont's time the real differences between gases were so little understood that the value of the generalized term was not appreciated at the time. It required another century of accumulated facts to make it necessary.

It would be interesting to know if Paracelsus really discriminated between air and the vapor of water, or other gases. The following passage is not conclusive, being capable of different interpretations. It is nevertheless of interest.

"When, from the element water, air [*Luft*] is to be separated, that takes place by boiling, and so soon as it boils, the air separates from the water and takes with it the lightest substance of the water, and in so much as the water is diminished so according to its proportion and quantity is the air also diminished."[14]

So strong an adherent as Paracelsus of the neo-Platonic notions of the interrelation of all things in the universe, would naturally be interested in the prevalent theories of the nature of matter and of its changes. That the causes which influence health and disease might be understood it was necessary

[13] *Chir. Bücher,* etc., p. 378, "Von offenen Schäden."

[14] *Op. fol.,* I, 791, "Archidoxa—De separationibus elementorum."

that the nature of chemical changes, and the constitution of matter should be understood.

Hindu, Greek, Arab and later philosophers had speculated upon the nature of matter with the result of the final crystallization in medieval philosophy of the theory of the four elements, Fire, Air, Earth and Water. Upon this was founded the Galenic doctrine of the four humors in the human organism, and the theory had become in the medieval Aristotelianism petrified into infallible dogma.

Medieval alchemists had as the result of the study of metallurgical chemistry, of observations upon the occurrence of the metals in the earth and the changes to which they are subject, from time to time developed certain independent notions of the nature of matter. The strange properties of mercury and of its alloys with other metals, the occurrence of sulphur in many ores and its appearance or disappearance in the treatment of these ores, had given rise to speculations as to the possible relations of these substances to the growth or development of the metals in the earth. From such phenomena and from the peculiar properties of many alloys of the common metals arose doubtless the hopes of transmutation of base metals into purer or more precious metals.

Raimundus Lullus and other early alchemists had assumed therefore that mercury and sulphur were present in all metals. In the literature of the Middle Ages or early Renaissance the mercury or

mercuries, and the sulphur or sulphurs were not the elements sulphur and mercury as we understand them but were supposed to be substances related to these elements and capable of influencing the colors, fusibility, behavior toward fire, etc., of the metals of which they were constituent principles. There was no agreement among writers of the time, however, as to the properties of these elementary substances, nor as to their role or function in the metals or their ores.

Upon this vague and variable foundation, this inheritance from the alchemists, Paracelsus constructed his more comprehensive and consistent theory of the three elements, Sulphur, Mercury and Salt, which was destined to become the most influential theory of the constitution of matter until gradually replaced by the phlogiston theory in the eighteenth century.

Paracelsus recognized the four Aristotelian elements or principles—Earth, Air, Water, Fire—but considered them also as consisting of the three primary elements (*tria prima*). To his three elements he assigned more definite and better characterized functions than had previously been recognized. Sulphur was the combustible principle in all substances, not merely in the metals; Mercury that which imparted the property of liquidity, or fusibility, and volatility; and Salt that which determined the nonvolatility and incombustibility of substances.

"For all that fumes and disappears in vapors is

Mercury; all that burns and is consumed is Sulphur; all that is ashes is also Salt."[15]

These three constituents of all matter are not, however, to be understood as answering to the definition of elementary substances as at present accepted. Like the Aristotelian elements, they also typified qualities or principles. Thus, Sulphur was not a substance of constant and invariable properties entering into the constitution of other substances, but varied with the substance which contained it. To use the words of Paracelsus—"For as many as there are kinds of fruits—so many kinds are there of Sulphur, Salt, and so many of Mercury. A different Sulphur in gold, another in silver, another in iron, another in lead, zinc, etc. Also a different one in sapphire, another in the emerald, another in ruby, chrysolites, amethysts, magnets, etc. Also another in stones, flint, salts, spring-waters [*fontibus*], etc. And not only so many kinds of Sulphur but also so many kinds of Salt—different ones in metals, gems, etc.....And the same with Mercuries, different ones in the metals, others in gems, and as many as there are species—so many Mercuries. And yet they are only three things. Of one nature is Sulphur, of one nature is Salt, of one nature Mercury. And further they are still more divided, so that there is not only one kind of gold but many kinds of gold—just as there is not only one kind of pear or apple but many kinds. There-

[15] *Op. fol.*, I, 898, "De natura rerum."

fore there are just as many different kinds of Sulphurs of gold, Salts of gold, Mercuries of gold."[16]

We should therefore consider the three elementary principles of Paracelsus and his followers rather as generalizations of certain properties inherent in and common to matter, than as elements in the modern sense. The importance that this theory possessed for his time was that it was more closely related to phenomena observed in chemical experimentation than the concept of the Aristotelian elements. Consequently it became the dominant hypothesis as to the nature of matter until in the seventeenth century the keen critical analysis of Robert Boyle laid bare its inadequacy and unscientific basis. Boyle indeed it was who first clearly enunciated the modern definition of an element as a substance which cannot by our efforts be resolved into simpler constituents, though he did not venture to apply this definition to any particular substance.

The great service of Paracelsus to chemistry was not in any epoch-making discovery nor in any development of theory of permanent value, but in opening a new and great field for chemical activity in the application of chemistry to the preparation of mineral and vegetable remedies. He not only put into use many known chemical substances in his practice, but he advocated insistently and forcefully the necessity of the knowledge of chemistry to the physician, and emphasized the value of experiment

[16] *Op. fol.*, II, 132, "De mineralibus."

as against dependency upon the records of the ancients.

"But because you are ignorant of alchemy you are also ignorant of the mysteries of nature. Do you think that because you have Avicenna and Savonarola, Valescus and Vigo that you therefore know everything? That is but a beginning.... That which Pliny, Dioscorides, etc., have written of herbs they have not tested, they have learned it from noble persons who knew much about their virtues and then with their smooth chatter have made books about it.... Test it and it is true. But you do not know it is true—you cannot carry it out, you cannot put to proof your author's writings. You who boast yourselves *Doctores* are but beginners.

"What do Hermes and Archelaus attribute to vitriol?—Great virtue, and it is true such virtue is in it. But you do not know wherein it lies, neither in the green nor in the blue vitriol, and yet you call yourselves masters of natural things and do not know that! You have read so that you know what is there written but you can make no use of it.

"What do other chemists and philosophers say about the powers of mercury? Much indeed and it is true. But you do not know how to prove it true. .... You do nothing but read, 'that is in this, this is in that, that is black and this is green—and further than that I can (God help me) do nothing, thus I find it written.' Do you think I have laid my foundation [of medicine] without reason in the arts of alchemy? Tell me who are to be trusted in the

knowledge of the virtue of things in nature, those who have written and not known how to make proof, or those who have the knowledge to make proof —but have not written? Is it not true that Pliny has never shown any proofs? What did he write then?—That which he had learned from the alchemists. And so you if you do not know and recognize who these are—you are but a lame physician."[17]

Another illustration of his argument for the value of experiment and his criticism of those who depended solely upon the ancient authorities is the following (he is discussing the preparation of medicinal principles):

"The separation of those things that grow from the earth and are easily combustible, as all fruits, herbs, flowers, leaves, grass, roots, woods, etc., takes place in many ways. Thus by distillation is separated from them first the phlegm [i. e., a watery distillate]; then the mercury [i. e., volatile or gaseous products] and the oily portion; third its resin; fourth its sulphur [that which burns]; and fifth its salt [non-volatile and uncombustible, or the ash]. When this separation has taken place by chemical art, there are found many splendid and powerful remedies for internal and external use.

"But because the laziness of the supposed physicians has so obtained the upper hand and their art serves only for display, I am not surprised that such preparations are quite ignored and that charcoal [i. e., fuel] remains cheap. As to this I will

[17] *Op. fol.*, I, pp. 221f, "Paragranum."

say that if the smith could work his metals without the use of fire, as these so-called physicians prepare their medicines without fire, there would be danger that the charcoal-burners would all be ruined and compelled to flee.

"But I praise the spagyric [chemical] physicians, for they do not consort with loafers or go about gorgeous in satins, silks and velvets, gold rings on their fingers, silver daggers hanging at their sides, and white gloves on their hands, but they tend their work at the fire patiently day and night. They do not go promenading, but seek their recreation in the laboratory, wear plain leathern dress and aprons of hide upon which to wipe their hands, thrust their fingers amongst the coals, into dirt and rubbish and not into golden rings. They are sooty and dirty like the smiths and charcoal-burners, and hence make little show, make not many words and gossip with their patients, do not highly praise their own remedies, for they well know that the work must praise the master, not the master his work. They well know that words and chatter do not help the sick nor cure them. Therefore they let such things alone and busy themselves with working with their fires and learning the steps of alchemy. These are distillation, solution, putrefaction, extraction, calcination, reverberation, sublimation, fixation, separation, reduction, coagulation, tinction, etc."[18]

This opening-up of a new field of chemical activ-

[18] *Op. fol.*, I, 906, "De natura rerum."

ity which promised so much of importance in its development and which touched directly upon the field of the practice of medicine, the most important field of natural science at that period, and the appeals of Paracelsus to abandon the search for the transmutation of metals and other vain goals of the alchemists, met almost immediate response among those students who were interested in the study of nature—and there were many such—and it was indeed from the chemists that the most enthusiastic and productive followers of Paracelsus arose. A new and important impulse had been imparted to chemistry, so that in spite of the fact that no great chemical discoveries or generalizations can be attributed to Paracelsus he may yet with justice be called a reformer of chemistry.

It is interesting to contrast the work of Paracelsus with that of his great German contemporary, Georgius Agricola (Georg Bauer), 1494-1555. Agricola was also medically trained as well as thoroughly versed in mining and metallurgy.

His descriptions of mining and of metallurgical and chemical facts and processes are systematic, orderly and generally clear and comprehensible. His theory was based upon the prevalent Aristotelian ideas. His published work upon mining and metallurgy possesses more permanent interest from a scientific point of view than the writings of Paracelsus because he confined himself to the task of presenting the established facts and processes of his specialty in clear, detailed description, so that it

might be of use for others who should follow in the same line of work. Many chemical facts and processes are mentioned that appear also in Paracelsus, but as with Paracelsus, so with Agricola there is no pretension that these are original with the author.

It is interesting to note that neither one of these two men—the most important of their century in chemistry—seems to have been aware of the existence of the other. Agricola in Saxony and Paracelsus in Switzerland and Austria possessed many interests and much knowledge in common, but Agricola's great work appeared after the death of Paracelsus, while those works of Paracelsus which contain most of his chemistry did not appear in print until after the death of Agricola. It is therefore not surprising that neither knew of the other. Agricola's great work *De re metallica* remains a classic in technical chemistry, while Paracelsus has left little that is of permanent value to chemical science. But the reform of chemistry was not the main aim of the efforts of Paracelsus, to him that was but subordinate to his great ambition, the revolution of medicine.

Yet the influence of Paracelsus upon chemistry was epoch-making. By pointing out a rational and promising field for chemical activity and by his own successful application of chemically prepared remedies he inaugurated a movement which has continued without interruption and with increasing importance to the present day.

From his time on a new vitality was infused

into chemical thought and activity. .Instead of the passive acceptance of ancient authorities and traditions, there began a struggle for progress through experiments and their interpretation, often indeed unscientific and illogical at first; nevertheless, only from such beginnings of independent thought and initiative was the scientific spirit to be developed.

CONTRIBUTIONS TO MEDICAL SCIENCE AND PRACTICE.

WHILE the specific contributions of Paracelsus to chemical knowledge are comparatively unimportant and yet his influence as a reformer beyond question, in medical science the opposite appears more nearly true.

There appears to be little doubt as to the real value of many of his contributions to medical knowledge and practice, while competent authorities differ widely as to the extent and character of his influence upon medical progress. It may be admitted that his vigorous assaults upon the degenerate Galenism of his day were effective in arousing an attitude of criticism and questioning which assisted greatly the influence of other workers whose labors were laying less sensationally but more soundly the foundation-stones of scientific medicine.

Vesalius, often called the founder of the modern science of anatomy, and Paré, the "Father of Surgery," were both contemporaries of Paracelsus, though their great works appeared only after the death of Paracelsus. The *Greater Surgery* of Para-

celsus had appeared nearly thirty years before Paré's classical work and had passed through several editions, and it is said that Paré acknowledged his indebtedness to Paracelsus in the Preface to the first edition of his work.[1]

Admitting that none of the medical treatises of Paracelsus has the scientific value of the works of his great contemporaries, it should nevertheless not be forgotten that his work may have had an influence for progress in his own time much greater than its present value in the light of later knowledge. Dr. Sudhoff records some nineteen editions of the *Greater Surgery* by the close of the sixteenth century, in the German, French, Latin and Dutch languages, and other works of his shared in somewhat less degree in this popularity.

The disapproval and hostility of the universities and the profession toward Paracelsus should not be permitted to mislead us into underrating his influence, as it may be recalled that both Vesalius and Paré also suffered from this hostility. Vesalius was denounced by his former teacher Sylvius as an insane heretic and his great work on anatomy was denounced to the Inquisition. Though he was not condemned by that body his professorship at Padua became untenable, and he was forced to return to his native city Brussels and is said to have become a hypochondriac as the result of his persecutions.

Paré was more successful in maintaining his professional position through official support, though

[1] Cf. Stoddart, *The Life of Paracelsus*, p. 65.

the faculty of the University of Paris protested his tenure of office.

The history of medical science and discovery has been the subject of more thorough study than most of the natural sciences, and a number of competent critics of early medical history have estimated the place of Paracelsus in the development of various departments of that science. From such sources may be best summarized the contributions of Paracelsus.

Thus with respect to surgery, Dr. Edmund Owen in the *Encyclopaedia Britannica* (eleventh edition, article "Surgery") says:

"The fourteenth and fifteenth centuries are almost entirely without interest for surgical history. The dead level of tradition is broken first by two men of originality and genius, P. Paracelsus (1493-1541) and Paré, and by the revival of anatomy at the hands of Andreas Vesalius (1514-1564) and Gabriel Fallopius (1523-1562), professors at Padua. Apart from the mystical form in which much of his teaching was cast, Paracelsus has great merits as a reformer of surgical practice. . . . It is not, however, as an innovator in operative surgery, but rather as a direct observer of natural processes, that Paracelsus is distinguished. His description of 'hospital gangrene,' for example, is perfectly true to nature; his numerous observations on syphilis are also sound and sensible; and he was the first to point out the connection between cretinism of the offspring and goiter of the parents."

So also Proksch,[2] the historian of syphilitic diseases, credits Paracelsus with the recognition of the inherited character of this disease and states that there are indeed but few and subordinate regulations in modern syphilis therapy which Paracelsus has not enunciated. Iwan Bloch also attributes the first observation of the hereditary character of that disease to Paracelsus.[3] That Paracelsus devoted so much attention to the consideration of these diseases was evidently made a subject of contemptuous criticism by his opponents, as may be inferred from his replies to them in the *Paragranum*:[4]

"Why, then, do you clowns [*Gugelfritzen*] abuse my writings, which you can in no way refute other than by saying that I know nothing to write about but of *luxus* and *venere*? Is that a trifling thing? or in your opinion to be despised? Because I have understood that all open wounds may be converted into the French disease [i. e., syphilis], which is the worst disease in the whole world—no worse has ever been known—which spares nobody and attacks the highest personages the most severely—shall I therefore be despised? Because I bring help to princes, lords and peasants and relate the errors that I have found, and because this has resulted in good and high reputation for me, you would throw me down into the mire and not spare the sick. For

[2] Quoted by Baas, *Geschichtliche Entwickelung des ärztlichen Standes*, p. 210.

[3] Neuburger and Pagel, *Handbuch der Geschichte der Medizin*, III, p. 403.

[4] *Op. fol.*, I, 201f.

it is they and not I whom you would cast into the gutter."

Dr. Bauer[5] calls attention to the rational protest of Paracelsus against the excessive blood-letting in vogue at the time, his objections being based on the hypothesis that the process disturbed the harmony of the system, and upon the argument that the blood could not be purified by merely lessening its quantity.

"For the healing art and for pharmacology in connection therewith," says Dr. E. Schaer in his monograph on the history of pharmacology,[6] "reform in the first instance attaches to the name of Theophrastus Paracelsus whose much contested importance for the rebirth of medicine in the period of the Reformation has been in recent times finally established in a favorable direction by a master work of critical investigation of sources. . . . But however much overzealous adherents of the brilliant physician may have misunderstood him and have gone at times beyond the goal he established, nevertheless the historical consideration of pharmacology will not hesitate to yield to Paracelsus the merit of the effective repression of the medieval polypharmacy often as meaningless as it was superstitious, and to credit him with having effectively called attention to the pharmacological value of many metallic preparations and analogous chemical remedies."

Dr. Max Neuburger[7] thus summarizes the claims

[5] *Geschichte der Aderlässe*, p. 147.

[6] Neuburger and Pagel, *op. cit.*, II, pp. 565f.

[7] *Ibid.*, II, pp. 36ff.

of Paracelsus to a place in the history of the useful advances in medicine:

"Under the banner of utilitarianism Paracelsus rendered the practical art of healing so many services that in this respect his preeminent historical importance cannot be doubted. In bringing chemistry to a higher plane and in making the new accessory branch useful to medicine, in comprehending the value of dietetics, in teaching the use of a great number of mineral substances (iron, lead, copper, antimony, mercury), and on the other hand in teaching the knowledge of their injurious actions, in paving the way to the scientific investigation of mineral waters (determination of the iron contents by nutgalls), in essentially improving pharmacy (with his disciples Oswald Croll and Valerius Cordus) by the preparation of tinctures and alcoholic extracts .... he has achieved really fundamental merit for all time."

It was also no unimportant service that Paracelsus rendered to medical science in attributing to natural rather than to the mystical influence of devils or spirits such nervous maladies as St. Vitus's dance. It is doubtful perhaps if his influence in this direction was very immediate upon contemporary thought, at least if we may judge from the sad history of the trials, tortures and executions of witches during a century after the activity of Paracelsus.

Doubtless also the fantastic character of the

philosophy of Paracelsus itself served to diminish the effect of his sounder and saner thought.

A distinguished student of the history of science, Andrew D. White, thus characterizes the services of Paracelsus in this direction:[8]

"Yet, in the beginning of the sixteenth century, cases of 'possession' on a large scale began to be brought within the scope of medical science, and the man who led in this evolution of medical science was Paracelsus. He it was who first bade modern Europe think for a moment upon the idea that these diseases are inflicted neither by saints nor demons, and that the 'dancing possession' is simply a form of disease of which the cure may be effected by proper remedies and regimen. Paracelsus appears to have escaped any serious interference; it took some time, perhaps, for the theological leaders to understand that he had 'let a new idea loose upon the planet,' but they soon understood it and their course was simple. For about fifty years the new idea was well kept under, but in 1563 another physician, John Wier of Cleves, revived it at much risk to his position and reputation."

An interesting thesis maintained by Paracelsus was the doctrine that every disease must have its remedy. The scholastic authorities had pronounced certain diseases as incurable, and they were accordingly so considered by the profession. Rejecting as he did the ancient authorities, Paracelsus

[8] *History of the Warfare of Science with Theology*, New York and London, 1896 (reprinted 1919), II, p. 139.

naturally enough rejected this dogma as necessarily true. Manifestly also he believed that he himself had with his new remedies effected cures of certain of these diseases, though he makes no pretension to be able to cure all diseases. The history of medical thought and discussion shows that this thesis of Paracelsus was a frequent subject of partisan debate during the century after Paracelsus.

Paracelsus sustains his thesis, however, not by the method of modern science—upon evidence of experiment and observation—but by the philosophical or rather metaphysical argument of its *a priori* reasonableness in the divine purpose, and by his interpretation of the doctrines of Christ. So he says:[9]

"Know therefore that medicine is so to be trusted in relation to health—that it is possible for it to heal every natural disease, for whenever God has entertained anger and not mercy, there is always provided for every disease a medicine for its cure. For God does not desire us to die but to live, and to live long, that in this life we may bear sorrow and remorse for our sins so that we may repent of them."

"There is yet another great error which has strongly influenced me to write this book—namely, because they say that diseases which I include in this book are incurable. Behold, now, their great folly: how can a physician say that a disease is incurable when death is not present; those only

[9] *Liber de religione perpetua*, quoted by Sudhoff, *Versuch einer Kritik der Echtheit der Paracelsischen Schriften*, Berlin, 1894-99, II, p. 415.

are incurable in which death is present. Thus they assert of gout; of epilepsy. O you foolish heads, who has authorized you to speak, because you know nothing and can accomplish nothing? Why do you not consider the saying of Christ, where he says that the sick have need of a physician? Are those not sick whom you abandon? I think so. If, then, they are sick as proven, then they need the physician. If, then, they need the physician, why do you say they cannot be helped? They need the physician that they may be helped by him. Why, then, do you say that they are not to be helped? You say it because you are born from the labyrinth [of errors] of medicine, and Ignorance is your mother. Every disease has its medicine. For it is God's will that He be manifested in marvelous ways to the sick."[10]

This is obviously setting dogma against dogma, and opposing to scholasticism the methods of scholasticism. Yet that this dictum of Paracelsus was not without influence upon contemporary thought is evidenced by a passage in the writings of Robert Boyle in the century following:[11] "But, Pyrophilus, though we cannot but disapprove the vainglorious boasts of Paracelsus himself and some of his followers, who for all that lived no longer than other men, yet I think mankind owes something to the chymists for having put some men in hope of doing greater cures than have been formerly aspired to or even thought possible, and thereby engage

[10] *Op. fol.*, I, 253, "Die erste Defension."

[11] Boyle's *Works*, Birch's ed., London, 1744, I, p. 481.

them to make trials and attempts in order thereunto. For not only before men were awakened and excited by the many promises and some great cures of Arnaldus de Villanova, Paracelsus, Rulandus, Severinus and Helmont, many physicians were wont to be too forward to pronounce men troubled with such and such diseases incurable, and rather detract from nature and art than confess that those two could do what ordinary physick could not, but even now, I fear, there are but too many who though they will not openly affirm that such and such diseases are absolutely incurable, yet if a particular patient troubled with any of them is presented, they will be very apt to undervalue (at least) if not deride those that shall attempt and hope to cure them."

In a previous chapter have been noted the rational consideration and treatment which Paracelsus applied to wounds and open sores. Instead of the customary treatment of closing up by sewing or plastering, or covering them with poultices and applications, he advocated cleanliness, protection from dirt and "external enemies," and regulation of diet, trusting to nature to effect the cure. "Every wound heals itself if it is only kept clean."[12]

There is no doubt that Paracelsus enjoyed a considerable reputation as a skilful and successful practitioner, and there is contemporary testimony, as well as his own statements, to show that he was frequently sent for even from long distances to treat

[12] Cf. Fr. Helfreich in Neuburger and Pagel, *op. cit.*, III, p. 15.

wealthy and prominent patients whose maladies had baffled the skill of the Galenic physicians.

It is, of course, true that popular reputations of physicians are not always the true measure of ability even in our day. Nevertheless, there seems little reason to doubt in spite of the assertion of hostile critics of his time, that with his new remedies, his keen observation and his unusually open mind, he was indeed able to afford relief or to effect cures where the orthodox physicians trammeled by their infallible dogmas were unsuccessful. That his new methods sometimes did harm rather than good is quite possible. That would naturally be the result of breaking radically new paths. And an independent empiricism —a practice founded upon experiment and personal observation—seems to have been his practice and his teaching: "*Experientia est Scientia.*" It seems probable that in his dealings with the sick, his fantastic natural philosophy was rather subordinated to a native common sense and practical logic. As stated by Professor Neuburger,[13] "We see in Paracelsus. . . . the most prominent embodiment of that enigmatic, intuitive, anticipative intelligence of the people, which, drawing upon the unfathomable sources of a rather intuitive than consciously recognized experience, not infrequently puts to shame the dialectically involved reasoning of scholasticism."

Paracelsus has indeed clearly expressed his opinion that theories should not be permitted to dominate the practice of the physician.

[13] *Ibid.*, II, p. 35.

"For in experiments neither theories nor other arguments are applicable, but they are to be considered as their own expressions. Therefore we admonish every one who reads these, not to oppose the methods of experiment but according as its own power permits to follow it out without prejudice. For every experiment is like a weapon which must be used according to its peculiar power, as a spear to thrust, a club to strike—so also is it with experiments. . . . To use experiments requires an experienced man who is sure of his thrust and stroke that he may use and direct it according to its fashion."[14]

That he endeavored to keep an open mind toward the symptoms of his patients, not too much governed by preconceived dogmas, is also indicated in his defense against certain attacks of his opponents in which they accuse him of not at once recognizing symptoms and treatment:

"They complain of me that when I come to a patient, I do not know instantly what the matter is with him, but that I need time to find out. It is indeed true that they pronounce judgment immediately—their folly is to blame for that, for in the end their first judgment is false, and from day to day as time passes they know less what the trouble is and hence betake themselves to lying, while I from day to day endeavor to arrive at the truth. For obscure diseases cannot be at once recognized as colors are. With colors we can see what is black, green, blue, etc. If, however, there were a curtain

[14] *Chir. Bücher*, etc., pp. 300f. "Von frantzösischen Blatern," etc.

in front of them we could not recognize them.... What the eyes can see can be judged quickly, but what is hidden from the eyes it is vain to grasp as if it were visible. Take, for instance, the miner; be he as able, experienced and skilful as may be, when he sees for the first time an ore, he cannot know what it contains, what it will yield, nor how it is to be treated, roasted, fused, ignited or burned. He must first run tests and trials and see whither these lead... Thus it is with obscure and tedious diseases, that so hasty judgments cannot be made though the humoral physicians do this."[15]

Admitting the value of the positive contributions of Paracelsus to medical knowledge and practice, the net value of the reform campaign which he instituted is variously estimated by historians of medicine. For it must be remembered that Paracelsus fought against dogmas intrenched in tradition, by dogmas of his own. To the fantastic theories of the Greek-Arabian authorities he opposed many equally fantastic theories. That by his assault upon the absurdities and weaknesses of the Galenic medicine of his time he paved the way for greater hospitality to new and progressive ideas is unquestionable, but that by this assault he also did much to discredit the valuable elements as well as the corruptions of ancient medical achievements is also true. It is very difficult to justly balance the progressive and the reactionary influences he exerted upon the progress of medicine—and naturally, there-

[15] *Op. fol.*, I, 262, "Die siebente Defension."

fore, authorities differ upon this question. Thus Neuburger[16] appreciates the value of the accomplishments of Paracelsus, yet doubts that he is to be considered as a reformer of medicine in the sense that was Vesalius or Paré, that is, he laid no foundation-stones of importance, and the real value of much of his thought required the later developments of modern scientific thought for its interpretation. His aim was to found medicine upon physiological and biological foundations, but the method he chose was not the right method, and his analogical reasoning and fantastic philosophy of macrocosm and microcosm were not convincing and led nowhere. The disaffection and discontent with conditions in medicine produced by his campaign, can, thinks Neuburger, hardly be called a revolution. That was to come later through the constructive work of more scientific methods.

In a similar vein Häser[17] remarks, "Scarcely ever has a physician seized the problem of his life with purer enthusiasm, served it with truer heart, or with greater earnestness kept in view the honor of his calling than the reformer of Einsiedeln. But the aim of his scientific endeavors was a mistaken one and no less mistaken was the method by which he sought to attain it."

A recent writer, Professor Hugo Magnus,[18] presents a more critical point of view:

"We must, then, summarize our judgment to this effect, that Paracelsus keenly felt the frightful

[16] *Op. cit.*, p. 37. [17] *Op. cit.*, p. 105. [18] *Op. cit.*, pp. 11-13.

corruption which medicine and the investigation of nature suffered from the hands of the scholastics, but that he did not understand how to penetrate to the causes of this condition of his science. Instead of seeking in the scholastic system the root of this medical degeneration, he believed that it must be found exclusively in the healing art of the ancients. And thus he sought to shatter in blind hatred all that existed, without being in position to replace the old theory he maligned by a new and better concept of nature and medicine. So Paracelsus wore away in confused wrestling his bodily and mental energy, and lived, indeed, as a reformer — as a medical superman—in his own imagination, in his own valuation, but not in the recognition of his own times, nor in the judgment of posterity.

"If, therefore, I can find no relationship between the general methods of medicine to-day and the Theophrastic concept of nature, nevertheless our super-colleague must be considered in an essentially limited respect, to be sure, as the pioneer in certain modern points of view. He was the first to attempt the consideration of the phenomena of organic life in a chemical sense, and I do not need to emphasize that he thereby paved the way to a very powerful advance in our science. In this respect was Paracelsus a reformer, here he has pointed new paths in the valuation of pathological phenomena as well as in therapy, even if here also he has theorized enough and allowed his neo-Platonism to play him many a trick."

By discarding and condemning all the ancient authorities, thinks Magnus, Paracelsus assailed not only the corrupted Galenism of his time but did much to discredit the positive achievements of the Greeks, and although the original Greek authorities were not the then prevailing texts, they were at least accessible in newly translated versions, and the good in them might have been incorporated and built upon by Paracelsus if he had possessed the scientific point of view. To the extent of his influence in this direction Paracelsus was therefore an opponent rather than a promoter of the progress of medical science. "Through his irrational theories he gave impulse to all sorts of mistaken notions among his followers, so that the wildest vagaries existed among the Paracelsists of the succeeding century."

The above will serve to illustrate the trend of modern critical judgment of Paracelsus as a reformer of medicine.

However estimates may vary as to the extent of the influence of Paracelsus as a reformer of medicine, credit must certainly be given him as a forceful agent in the downfall of the scholastic medical science of his time. The real reform in medical science, its establishment upon a basis of modern scientific method, was not the work of his century nor of the century to follow. Indeed, it may not be too much to say that that great reform was mainly the work of the nineteenth century, and was made possible only through the patient labors of many investi-

gators in the domains of physics, chemistry, anatomy and biology.

If, however, we cannot claim for Paracelsus the unchallenged place of the reformer of medicine, we may at least recognize in him an earnest, powerful and prophetic voice crying in the wilderness.

THE MISSION AND ETHICS OF THE PHYSICIAN.

WERE we to accept the estimate of the character of Paracelsus which had gradually come to be accepted during the eighteenth century—that he was a coarse and ignorant charlatan—it would be a contradiction in terms to consider him seriously in the role of a teacher of ideals of morality and ethics.

Fortunately, however, the investigations of a number of thorough students of the life and times of Paracelsus justify us in accepting a very different judgment of his character and personality.

Egotistic, intolerant and rude as he often shows himself to be, no authentic incidents have been adduced affecting his essential earnestness, integrity or morality. His former secretary and student Oporinus, in a letter written long after the death of Paracelsus, indeed makes the accusation of drunkenness against him, but this testimony has been discredited both on grounds of the circumstances which brought out the letter during the bitter anti-Paracelsan contest, and of the general character of

the writer.[1] Had there been a solid basis for the charge it is hardly to be believed that greater use of this effective weapon would not have been made by his antagonists during his lifetime. Schubert and Sudhoff quote also from a work of J. Agricola, the statement of a certain Aegidius von der Wiese, a former pupil of Paracelsus, in which he says: "But this is true that Paracelsus enjoyed drinking, but on the other hand, when he had undertaken anything he scarcely ate nor drank until he had completed it and then, when he had the time, he became ordinarily merry [*gemeiniglich lustig*]."

This statement may well stand against the similarly unsupported statement of Oporinus. The custom of his time and country would indeed have condoned a reasonable indulgence and even occasional excesses of that kind, though passages in Paracelsus's works are not few where he himself condemns drunkenness, and there is no positive evidence that his own life was inconsistent with such convictions.

Ignorance also cannot be charged against him. This charge seems to have been based largely upon the fact that he wrote and lectured in German rather than in Latin. But those who lived in his time and country doubtless well knew that his reasons for so doing were much the same that animated Luther who had set him the example. Moreover, his use of Latin in his own works, and his many allusions to Greek and Latin authors make it evident that he commanded the language in which they were writ-

[1] Cf. Schubert and Sudhoff, *Paracelsusforschungen*, II, pp. 79ff

ten and possessed an extensive familiarity with their doctrines, though perhaps not a scholarly interest in their writings.

Nevertheless, whatever may have been his shortcomings and limitations, there is no reason to doubt the earnestness or sincerity of his efforts to raise the standards of medical ethics, nor the essential piety of his own convictions.

We may, therefore, be justified in accepting the consistently and constantly reiterated ideals of the mission of medicine, and of the ethical standards of the medical practitioner as the sincere utterances of a devoted missionary.

The condition of medical ethics at the time, if we may judge from such expressions as have already been quoted from Erasmus, Agrippa and Ramus, and as the history of medicine affords ample confirmation, was such as to justify the criticisms of Paracelsus and warrant his efforts at reform That the persecution and contempt of the profession added an element of personal resentment and bitterness to his campaign is also manifest.

The character of the appeal of Paracelsus and its probable influence upon such medical students as were not too strongly prejudiced against him—and particularly upon the lay public, already, it would seem, somewhat suspicious of the conventional scholastic physician—may best be understood from his own utterances.

"Ye physicians, of what use to us is the name, the title, the university, if we possess not the knowl-

edge [of medicine]? Knowledge makes the physician, not the name or the school. What is it for us if we appear great and make great display, if we have not the knowledge? Of what use that we are considered great by lords, cities or countries—that we are given dignities and honors, and when the time of need arises, when we should be able worthily to repay the honors bestowed and we have not the knowledge? Whom do honors, the doctor's cloak and ring really adorn but those who deserve them by reason of their knowledge? Knowledge does not grow in our heads, if we do not know the virtues contained in the herbs. The garden of knowledge is like a garden of trees; the arts are founded in experience and taught by nature. If the trees in the garden are mutilated down to the trunk, of what use is the tree? However tall and handsome it may be, if it lacks branches no fruits can come of it. And like a tree mutilated to the trunk are those physicians who are grounded only in human fantasies, they are mutilated and yield no fruits—only the trunk stands. . . . Or to take another simile, as when a trooper cuts off the tail of a Frankish or Swabian horse to adorn his helmet so that he may gratify his vanity. But when summer comes the horse has nothing to protect him from the flies and has a wretched reward for having contributed to the trooper's splendor. So with physicians: if we give ourselves over to vanity and show, it happens to us as to the Swabian horse, when diseases appear we have no tails to protect us and must be vexed

by the diseases as the horse by the gadflies. For our vanity and splendor, our paternosters, our rings and name and title are only the stump remaining on the horse's rump and the tail which was so useful a protection is no longer there. . . . I wish to admonish all physicians that they scrutinize, not me to whom they are hostile, but themselves and then they may judge me accordingly. I was grown in your garden and was transplanted from it into another. That is, I was trained in that garden where trees are mutilated and was no slight ornament to the university. But when the *Archeites* saw that that growth would lead me into vanity and show, it was brought about that I should be transplanted and should be planted in another garden. For just as a good fruit-tree is dug up and a linden planted in its place, so it takes place there [in the universities]. For there the physician's fruitfulness is taken away from him, and he is made into a feast for the eyes like the linden-tree, but his fruits disappear. This transplanting was brought about for this reason, that after so much mutilation I should be planted in another garden, that is, that I should enter into the paths of experience and avoid that mutilation."[2]

Evidently his attacks upon the practitioners of his day brought forth from his opponents accusations of lack of professional courtesy, for he feels himself called upon to defend himself against this charge.

[2] *Chir. Bücher*, etc., p. 309, "Spitalbuch," Preface.

"It should not appear strange to any one that I cannot praise selfishness in medicine, because I know how harmful it is, so that the art of medicine has become falsified by it and has been led astray into a show and a bargaining, so that nothing can take place without falseness which leads to corruption in all things. The physician must not be founded on selfishness but in love. . . . I, for my part, am ashamed of medicine that it has so fallen into deception. There is no abandoned hangman, bawdy-house keeper, or dog-killer that will not sell his human or dog's fat for money and claim to cure all diseases with it, and that even when his conscience tells him that the treatment of one disease only is permitted to him. But because of their greed they take everything that comes their way. Therefore there have come into medicine all the lazy and wicked vagabonds, and they sell their remedies whether they suit the case or not. Whoever gets money in his purse has the reputation of being a good physician. . . . . They do not care that it has come to them undeserved, only so that it is there.

"It is also a doctor's custom wherever the law permits it—whether rightly or not I do not know—that a visit is worth a gulden whether earned or not. . . . . To have pity for another and to fulfil the law of love will not become a custom or use: they wish to have no law any more but to take—take, whether it is right or wrong. So they deck themselves with rings and chains of gold; so they go about in silken clothing and proclaim to all the world their open

disgrace, which they consider as an honor and as proper for a physician; so ornamented like a picture they strut about—it is an abomination in the sight of God. . . . Medicine is an art which should be employed with great conscientiousness and great experience and in the great fear of God, for he who does not fear God he murders and steals continually, and he who has no conscience has also no shame in him. . . . I trust I have defended myself from having anything to do with the pseudo-medici, or from doing anything to please them: I would rather speed the axe to be laid at that tree. If it depended on me it would not be long delayed."[3]

In a similar vein he elsewhere says:

"They have brought things to such a pass that all men flee from medicine and hold it all as knaving and swindling. They have so deceived people with their arts that a common peasant or a Jew commands more credence than they. And, indeed, these can do more than the doctors. Is it not a crime and a shame when a city physician [*Stadtarzt*] is appointed in a city, and the sick flee from him because he cannot help them and must let them lie, and others who have not studied must assist them?"[4]

His exalted ideal of the mission of medical science and of the true physician finds frequent utterance throughout his writings, as the following examples may illustrate:

"For God wills that man be truthful and not a

[3] *Op. fol.*, I, 259-261, "Die fünfte Defension."

[4] *Op. fol.*, I, 61, "Paramirum."

doubter and liar; He has created truth and not lies, and ordained and established the physician in the truth and not in lies. The truth is then his integrity. Such is the physician's integrity that he shall be as steadfast and as truthful as the Apostles of Christ, for in God's sight he is not less."[5]

"Now take note, that among all the arts and professions of mankind God most loves the physician and He commands and ordains him. Therefore, as the physician is so preferred and distinguished by God , he must be no hypocrite [*Larvenmann*], no old wife, no executioner, no liar, no trifler, but a real man must he be."[6]

"As now it is the physician alone who can most highly prize and praise God, he must have the greatest knowledge. And why? Who is it except the physician that can know man, what he is, and how great God has made him? He can make known the works of God, how noble the universe is, and how much nobler is man, and how one proceeds and is born from the other [i. e., the macrocosm and microcosm]. He who does not know this must not boast himself a physician."[7]

His ideals of service of the physician toward the poor and needy may be illustrated by the following extract from the Preface to his *Hospital-Book*.

"Of what use is it if I write much about the sick and the poor and of how their health is to be secured

[5] *Op. fol.*, I, 227, "Paragranum."

[6] *Ibid.*, I, 226.

[7] *Op. fol.*, I, 81, "Paramirum."

and do not also admonish the rich? For no good can happen to the poor without the rich. Both are bound together as with a chain, and as little may any chain suffer a break as the chain which binds together the rich and the poor. Learn, ye rich, to recognize these chains. For if you break your link, ye not only break the chain but like the broken link ye will be cast aside. Why, then, do you try to make yourselves free from the poor and to shut your help from them? Just as if you should take some links from a chain and make it too short, so, without the poor, would your path be too short to reach to the Kingdom of Heaven and you would not attain the goal for which the chain was given you. Learn then, both rich and poor, that all your diseases on earth lie in one single hospital and that is the hospital of God. . . .

"Do not let yourselves be discouraged because with many of the sick, neither help nor faith, nor art, nor benevolence, nor anything will help them; it is so ordained for them for reasons elsewhere sufficiently described. . . . Forget not your truth, despair not and be not discouraged, but continue in love. Despise not your art but make yourself skilled in it, that you may not fail in the truth and understanding of medicine, but that any failure may lie with nature. Be gentle and merciful and judge of your charities as to what aim, use and fruitfulness they may arrive, and trust nothing to unreason."[8]

Similar exhortations and expressions of his

[8] *Chir. Bücher*, etc., pp. 311f, "Spitalbuch."

strong convictions upon the mission of the true physician are scattered numerously through nearly all his writings. Evidently the purification of medical ethics and practice was one of the dominant aims of his reform campaign.

PARACELSUS AS A THEOLOGICAL WRITER.

UNTIL recently little notice has been taken of the very considerable activity of Paracelsus as a thinker and writer on theology. From the tenor of much that has been already cited it might be inferred that matters of theology could not be indifferent to him. And indeed it was known from very early records that Paracelsus had written works of this character. Even the inventory of his personal effects recorded at Salzburg after his death makes mention of a collection of theological manuscripts presumably written by himself. So also Conrad Gesner in his *Bibliotheca Universalis* (1545) says of Paracelsus that he composed and dedicated to the Abbot of St. Gall, "I know not what theological works which I believe not to have been published."[1]

Moreover there exists on record a receipt signed by Johannes Huser at Neuburg, October 10, 1594. for a collection of autograph manuscripts by Paracelsus upon theological subjects. The collection includes some twenty-five titles of works. Other lists

[1] Raymund Netzhammer, *Theophrastus Paracelsus*, Einsiedeln, 1901, p. 53.

of his theological writings are in existence dating from the latter half of the sixteenth century. In 1618 a publisher, Johann Staricius, issued a volume containing a few of these theological essays. In his Preface the editor asserts that he knows a place where nearly a cart-load of these theological manuscripts may be found.[2]

Of all these manuscripts not one is now known to exist as autograph, though Sudhoff's search through the libraries of Europe has brought to light collections of copies in the libraries at Leyden, Görlitz and elsewhere, some of these copies dating as early as 1564 to 1567, and many of them bearing titles included in the early list of autograph manuscripts as receipted for by Huser, or in other early lists.[3]

The manuscripts borrowed by Huser from the library at Neuburg were manifestly intended to be used in the published collection of his works. That they were not so used is easily explained by the tenor of the contents of such as have been in part printed or abstracted by Sudhoff in the second volume of his *Versuch*. For they are very outspoken and indeed frankly heretical in their criticisms of many of the institutions and observances of the Roman Church. Huser was himself a Roman Catholic, and the publication of the works of Paracelsus by Huser was undertaken under the patron-

[2] Cf. Netzhammer, *op. cit.*, p. 127.

[3] For statements as to the evidence of authenticity of many of these manuscripts, cf. Sudhoff, *Versuch*, etc., II, Introduction.

age and with the support of the Archbishop of Cologne. Though Paracelsus claimed allegiance to the Catholic Church and died and was buried at Salzburg as a Catholic, yet his views were so radical and so severely critical of many of the essential doctrines of the Church, that their publication could hardly have been possible under such support and supervision. Indeed, it is evident that any wide circulation of his writings would have brought upon him the severest discipline of the Church. Even the Lutheran clerical party would have had little sympathy with his point of view. It is quite probable that Paracelsus himself made no effort to print them but rather avoided their publication, preferring merely to place them in the hands of congenial thinkers or to leave them for posterity.

It is certain that the revolt of his contemporary Luther, and his countryman Zwingli as well as the critical spirit of Erasmus exercised a great influence upon Paracelsus—predisposed by natural temperament to independent and free thinking and criticism of authority.

It should be kept in mind also that severe criticism of the orthodox Church, its observances and corruption was quite prevalent even before the time of the Protestant Reformation. In Italy Machiavelli writing about 1500 thus freely criticizes the corruption of the Church: "Should we send the Curia to Switzerland, the most religious and martial of countries, that experiment would prove that no piety nor warrior's strength could resist the papal

corruption and intrigue.... The peoples nearest Rome have least religion....We Italians have to thank the Church and the priests that we have become irreligious and corrupt."[4]

So also Savonarola, the great Dominican monk, writing in 1493, the year of the birth of Paracelsus: "Go to Rome and throughout all Christendom in the houses of the great prelates and the great lords, they busy themselves with nothing but poetry and rhetoric. Go and see, you will find them with humanistic books in their hands; it will appear as if they knew how to guide souls by Virgil, Horace and Cicero. With Aristotle, Plato, Virgil and Petrarch they feed their ears and do not trouble themselves about the salvation of souls. Why do they not teach instead of so many books, that one in which is contained the law and the life." The prelates, said Savonarola, are sunk in ambition, shamelessness and luxury, and the princes—"their palaces and courts are the refuge of all beasts and monsters of the earth, asylums for all rascals and criminals. These stream thither because they find there opportunity and incitement to give free rein to all their boundless desires and evil passions....and what is worse, there also may be seen churchmen who join in the same accord."[5]

Whatever stimulus may have been given to the unorthodox theology of Paracelsus by the Protes-

[4] W. Dilthey, *Archiv für Geschichte der Philosophie*, IV, pp. 636f.

[5] Cf. Paulsen, *Geschichte des gelehrten Unterrichts*, 2d ed., Leipsic, 1896-97, I, pp. 10f.

tant Reformation, it is evident that he was no less critical and unsympathetic toward the Lutheran interpretation than toward the Catholic. This is evidenced by many passages in his writings wherein he refers to the Protestant leaders of his day as false prophets, etc.

"Those who stand with the Pope consider him a living saint, those who stand with the Arian[6] also hold him a righteous man, those who hold with Zwingli likewise consider him a righteous man, those who stand with Luther hold him a true prophet. Thus the people are deceived. Every fool praises his own motley. He who depends on the Pope rests on the sand, he who depends on Zwingli depends on hollow ground, he who depends upon Luther depends on a reed. They all deem themselves each above the other, and denounce one another as Antichrists, heathens and heretics, and are but four pairs of breeches from one cloth. It is with them as with a tree that has been twice grafted and bears white and yellow pears. Whoever opposes them and speaks the truth, he must die. How many thousands have they strangled and caused to be strangled in recent years."[7]

"They pray in the temples—but their prayer is not acceptable to God, for it means nothing, and they—altogether, Papists, Lutherans, Anabaptists, Zwinglians—they all boast that they are of the Holy Ghost, that they are founded on the Gospel.

[6] Here doubtless denoting any great heretic.

[7] Sudhoff, *Versuch*, etc., II, p. 411.

Therefore they cry 'I am right, the right is with me, I declare the word of God, here is Christ and His word as I tell it you—follow me, I am he who brings you the Gospel.' See what an abomination among Pharisees this is."[8]

More specifically may be judged the extent of his departure from the doctrines of his own Church in the following:

"It is vain—the daily churchgoing and all the genuflection, bowing and observances of church rules by clergy and the laity—none excepted—all a vain work with no fruits, the will and service of the Devil, opposed to Christ and the Holy Trinity. The reasons? The Church is called in Latin *Catholica* and is the spirit of all true believers, and their coming together is in the Holy Spirit. These are all in the faith, that is in the *fides catholica,* and it has no location. But *Ecclesia* is a walled structure."

Continuing, he condemns public prayers in the churches, church-festivals ("a dance of devils")—"God wishes a humble and contrite heart and no devilish holiday observances, offerings or displays." Fasting in the "walled churches" is an invention of the Devil. The giving of alms in the churches "does not serve toward eternal blessedness," and the giving of alms in the Catholic churches comes only from credulity and from no love from the neighbor nor for the neighbor. Pilgrimages, dispensations, "running to the saints" are all in vain and have no merit. The monastic orders, the religious orders of

[8] Schubert and Sudhoff, *Paracelsusforschungen,* II, p. 153.

knighthood and the like are inventions of the Devil and maintained in his honor. Spreading the faith by the sword is from the Devil.

"Who can presume to consecrate and bless the earth. It is God's earth, blessed to bring forth fruit; the water is blessed by God to quench thirst, to breed fish, to water the earth, not to sprinkle to banish the Devil as holy water."[9]

Similar points of view are found expressed in his printed works though naturally with less of detail in his criticism.

Thus from the *Paramirum*: "God will only have the heart, not ceremonies. . . . For every man is with God a neighbor and has full power to take up his affairs with God. But if a man gives this power out of his hands and does not keep what God has given him, but surrenders it to another and seeks it again from that other, then he falls into ceremonies and depends upon despair. For every ceremony is the way of despair. . . . For if we have anything to receive from God it is our hearts he sees and not the ceremonies. If he has given us anything, he does not wish that we should employ it in ceremonies but in our work. For he gives it for no other purpose but that we should love God with all our heart and our might, and soul, and that we should help our neighbor. If that which he has given us helps toward that, all ceremonies will be forgotten."[10]

[9] "De septem punctis Idolatriae Christianae," quoted by Sudhoff, *Versuch*, etc., II, pp. 338ff.

[10] *Op. fol.*, I, 114-115, "Liber de origine morborum invisibilium."

That such expressions as the above are not to be harmonized with the doctrines of the Church to which he claimed allegiance would appear obvious. The Rev. Raymund Netzhammer of the Benedictine order, one of the recent biographers of Paracelsus, thus expresses himself upon this point:[11]

"Far more in the domain of theology than even in medicine, does Paracelsus, who sometimes calls himself Doctor of Sacred Scripture, seem to recognize no authority, but to consider his own thinking and philosophizing as authoritative for him. That with this principle of free investigation, denying every authority, even that of the Church, he departed from the foundations of Catholic doctrine every well-informed person knows. But not only by this principle as such, but still more through its practical development did he separate himself from the faith of his fathers: he combated the hierarchical establishment of the Church, the power of the keys, its monastic orders, its ceremonies, its public prayers and devotions. He rejected preaching among Christians, who should teach themselves from the Scriptures, and banished the apostles and preachers to the heathen. . . . It must, however, not be denied, but on the contrary emphasized that Theophrastus possessed a very high, though unfortunately too mystical a concept of many doctrines and sacraments, as for instance of hereditary sin, of baptism with its inextinguishable symbols, and notably also of the communion. Baptism and communion are

[11] *Op. cit.*, pp. 128f.

for him the two principal roads which lead to Heaven."

The question as to his orthodoxy has been viewed differently by his biographers. His editor Huser mildly defends his Catholicism. "Some are inclined to hold him in suspicion on account of his religion, because in various places he speaks in opposition to certain abuses: in my opinion this is unjust, for, as concerns his faith, it is well known that he did not separate from the holy Catholic and Roman Church, but remained in obedience to it, as the Archbishopric and City of Salzburg can bear witness, where he died in the year 1541, a Catholic and Christian, and was honorably interred." (*Op. fol.*, Preface.)

Schubert and Sudhoff summarize the results of their studies into the life and character of Paracelsus thus:

"If we consider his attitude toward the religious parties of the time, we may perhaps find that in the years before 1531 he felt some inclination toward the Reformation of Luther and Zwingli, perhaps only in so far as he presumed in those who had broken in matters of faith with ancient authorities, a greater sympathy also with his reform ideas in the domain of medicine and natural science. . . . Later—after the year 1531—there is no further talk of sparing the Protestants. On the contrary, if he also combated the Roman hierarchy, the external forms of worship and other ceremonies, he yet rejects all

dissenting religious parties as 'sects,' almost even more violently."[12]

Though none of the theological papers of Paracelsus were published during his life, so far as is known, yet his views were more or less known, either from manuscript copies, or from his free oral expressions, and evidently brought upon him the displeasure and disapproval of Catholic authorities. Evidence as to this appears in a manuscript among the collection examined by Sudhoff and published in large part in his volume on the manuscripts of Paracelsus. The extract translated below is so eminently characteristic of Paracelsus's point of view in theological matters and so well illustrates his relation at the time to the orthodox theology, that it forms one of the most interesting expressions of his spiritual experience.

"Your daily disputations and sharp attacks upon me on account of my truth-speaking, namely, that I have sometimes and several times in taverns, inns and roadhouses spoken against useless churchgoing, luxurious festivals, vain praying and fasting, giving of alms, offerings, tithes,. . . .confession, partaking of the sacrament, and all other priestly rules and observances, and have accused me of drunkenness on account of this, because this has taken place in the taverns, and the taverns are held to be inappropriate places for the truth—and that you call me a corner-preacher:—Why do you do this to me at this time,

[12] Schubert and Sudhoff, *op. cit.*, II, pp. 152f.

when you were silent and well pleased when in the taverns I advised people to give offerings to you and to follow you and not to speak against you? If that was proper in the inns and was of service to you, then let it please you now that the truth is spoken in the inns. For there in the inns I was a believer in you, but now I am a believer in Christ and no longer in you. And if I came into the inns with you, then I would say to these same people, 'Guard yourselves against false prophets and deceivers who are sent by the Devil.' I would never again speak of giving to you, but of taking away from you, the usurped power which you have long exercised through the Devil's power. . . . Also you say of me that I have just sense enough to reason with peasants. . . . You say I should go amongst the doctors at Louvain, Paris, Vienna, Ingolstadt, Cologne, where I should have real persons under my eyes, not peasants, not tradesmen, but masters of theology. Know then my answer to this: to those will come their own equals. If it be not I, it will be another, but my teaching and my witnessing for Christ will come forth and overcome them. Christ never came to Rome, yet Rome is His vicar; St. Peter never came to Cologne, yet he is her patron saint, and if in the end I do not come that is not my fault. For the teaching is not mine, it is from Christ. He will send a Netherlands messenger if I cannot speak the language, and to those of Vienna and Ingolstadt he will send their countrymen, and the truth will be born amongst them and through them will come

to light and not through me. And when I am dead the doctrine will live on, for it is of Christ, who dieth not. And if I were at Louvain and at Paris it is not me they would punish—upon which you count—they would but punish Christ and not me. Yet I believe that my speaking to-day will be heard by them as well as if I had spoken in their presence. For Christ does not let his word be lost at any time. Nor does he let it lie hidden, it must go forward. It is not for one alone, it must be spread abroad. Everything must be opened to it.

"You complain much and loudly that I have made the peasants contumacious, so that they never make offerings and care little for you or not at all. Consider; if my speech were from the Devil, they would follow you and not me. But as they follow me and not you believe no other than that the Holy Spirit is in them which teaches them to recognize your character, trickery and great falsehoods. For I have not invented anything myself—what I have said that is from the Holy Ghost. It is the Gospel . . . . and has been the Gospel from the time of Christ till this day. But your trickery is more ancient—from Cain and from the old hypocrites and bishops. The new [Gospel] is true, the old, false. The new condemns the old, not the old the new. Were the Old Testament from which you take all your deceptions fully good and true, Christ would not have renewed it again."[13]

[13] "De septem punctis Idolatriae Christianae," quoted by Sudhoff, *Versuch*, etc., II, pp. 333ff.

The doctrines of theology which Paracelsus accepted appear not only from the above strong statement but consistently from numerous extracts throughout his works to be his own literal interpretation of the teachings of Christ. He asked for no intermediate authority to interpret to him their meaning, and entertained no doubts as to the correctness of his own rendering. That he was deeply impressed with the spirit of the teachings of Christ often shows itself, particularly in its practical relation to the service of man toward his fellow. Love and helpfulness for the neighbor, the poor and the sick are frequently themes of his appeals.

Among the manuscripts which Sudhoff has reproduced is a sermon containing an autobiographical fragment, manifestly written in his later years, which is so retrospective and introspective, and so completely in accord with the known facts of the life of Paracelsus, that it bears the strongest possible internal evidence of genuineness. The manuscript is at Leyden and is a copy made between 1590 and 1610. Copies of somewhat later date exist also in Copenhagen, Salzburg and the British Museum, the latter in a Latin version.

For the estimation of the personality and mental experiences of Paracelsus, it is too important to be omitted.

"As I have undertaken to write of the blessed life of Christian faith, it has not seemed proper to attempt to portray that without this introduction. . . . . Therefore I have undertaken to write this pref-

ace to the blessed life of Christian experience that I may excuse my delay in writing this book, as I began working upon it in the twentieth year [1520]. Why I have so long postponed and delayed has not happened without reasons. One of these is this that youth should not come forward before its proper time, as nothing should appear before its time, but should await the determined hour toward which we all progress. For another reason, not only my youth, but that other matters of my profession have prevented me, namely that astronomy, medicine and works in philosophy had to be described, that is to say, that which concerns the Light of Nature, so that I had to leave for a later harvest the Sacred Writings; that they might be well ripened, they have been postponed to the end and the lesser things completed first. These are two reasons that have strongly influenced me. But not only from these causes has the delay arisen, but much more from this that I was raised and grew up in great poverty so that my resources have not permitted me to act according to my desires.

"And even when I had nearly finished there arose in my affairs, public and private, much opposition which has lain on my shoulders alone, and there has been no one to hold back and shield for me. For very strange kinds of people have persecuted and accused me and hindered me and discredited me, so that I have had little reputation among men but rather contempt. For my tongue is not built for chattering but for work and for the

truth. That is the reason that I have not counted for much with the logicians and dialecticians in medicine, philosophy and astronomy. Also their pomp and display and fine speeches for princes and the rich—I have been nothing like that, and have therefore been forsaken. So also has greatly tormented me the winning of my bread [*der Pflug meiner Nahrung*]. For the world is not to be gained by astronomy, as it has little value except for itself, nor by medicine as it has not power over all diseases, nor by philosophy [i. e., natural philosophy] likewise, as it is held in contempt, but by tradesmen's wealth and courtly manners. That has been a cross to me and still is to this day.

"Nor has all this been the least:. . . .The other [reason] is so great that I can hardly describe it—that is the greatest cause which has hindered me from writing—that I have not been considered a true Christian; that has troubled me severely. For because I am a creature of God, redeemed by His blood and through it have received food and drink in the new birth, that has seemed sufficient to me to make me a true Christian.

"But there has arisen against me another crowd and faction who say, 'Thou as a layman, as a peasant, as a common man, shouldst not speak of such things as pertain to the Sacred Scriptures, but shouldst listen to us—to what we tell you and hold to that, and shouldst listen to no others nor read anything except us alone!' I was thus forced into a delay—I hardly dared to stir for they were power-

ful in this world, I had to endure it as one who must lie under the stairs.

"But, nevertheless, when I read the corner-stone of Christendom and heard the preaching and disputations of the others (it was like a miller and a coal-heaver against each other), it became necessary for me and manifest that I should accept rather the truth than lies, rather righteousness than unrighteousness, rather light than darkness, rather Christ than Satan. When I perceived the difference I let the opposition go without contradiction and accepted for myself the Christian corner-stone. As I then found that in the layman, in the common man, in the peasant (which name they employ when they would abuse their opponents most scornfully), the perfection of the blessed Christian life most abides, and not at all in those others, then I began to write of the truth of the life in Christ. When I had then finished the writing and concluded with much hope. there broke out the division of the kingdom of this world as it now is [i. e., the Reformation?]. So I delayed and took pause—postponed it till another autumn and harvest. It has now seemed good to me to make an end, and so to close with these books, the fruits of the seed which has been with me from the beginning.

"Therefore I have included in one work the relation of Christians to the blessed life and likewise the relation of Christians to the unblessed life.... Those in the unblessed life are great, are arrogant —they own the world, it is theirs—they are the

children of the light of the world. But the blessed—they have not the world—but they have their kingdom which is not of this world but of the Eternal, and with the Eternal: where two of the blessed life are together, there is Christ the third. Those are the riches that they have in this world. And although those who have opposed me have greatly hindered me, they have not suspected what has lain in my pen; I have kept my mouth closed, that the storm and the thunderbolt should not strike me to earth. Thereby I have brought it forward till this day and have not troubled myself about them, but have held companionship with the common people of whom they are ashamed and have myself therefore been despised. This has been my preparation for this work."[14]

[14] Sudhoff, *Versuch*, etc., II, pp. 406-408.

THE LATER YEARS OF STRENUOUS LABOR.

WHEN PARACELSUS so summarily terminated his career as a university teacher by his flight from Basel in 1528, he evidently realized that henceforth he could expect little sympathy or support from the profession or the university faculties. "I am called a rejected member of the universities, a heretic of the profession, a misleader of scholars."[1] He recognized that for the realization of his ambitions for the reform of medical theory and practice he must depend upon appeals to a wider public than the scholastic physicians and to a younger generation of medical students.

"Nevertheless, I shall not in my time be able to overthrow this structure of fables, for they are old and obstinate dogs who will learn nothing new and are ashamed to recognize their folly. That, however, does not matter very much, but it does matter that, as I hope, the young men will be of a very different character [*werden in eine andere Haut schlieffen,* i. e., *'schlüpfen'*] when the old

[1] *Op. fol.,* I, 201, "Paragranum," Preface.

ones have passed away, and will forsake their superstitions and thus the foundation [of medicine] will make progress."[2]

On leaving Basel he was in his thirty-fifth year. His subsequent life, comprising some thirteen years, was devoted with great energy and persistency to writing and when possible to publishing his many treatises upon medicine, surgery, natural philosophy, theology and other subjects comprising his voluminous works.

This work was pursued in spite of many obstacles and much opposition. Driven by poverty and the necessity for earning his bread, as well as by the hostility of his opponents, to frequent changes of residence, impelled often doubtless by his own native restlessness to seek new scenes of labor and experience, he led a lonely and wandering life.

The story of these wanderings has been pieced out in detail from autobiographical notes in his works, from dates and places where prefaces or dedications of his various books or letters were written and from occasional contemporary local records. Such data have been sifted and compared with local and contemporaneous records notably by R. J. Hartmann, and thus a very connected and probably correct record of this period of his life has been reconstructed.[3] It is not the purpose here to follow this story in detail. It appears, however, that no year

[2] *Chir. Bücher,* etc., Preface (first printed in 1536).

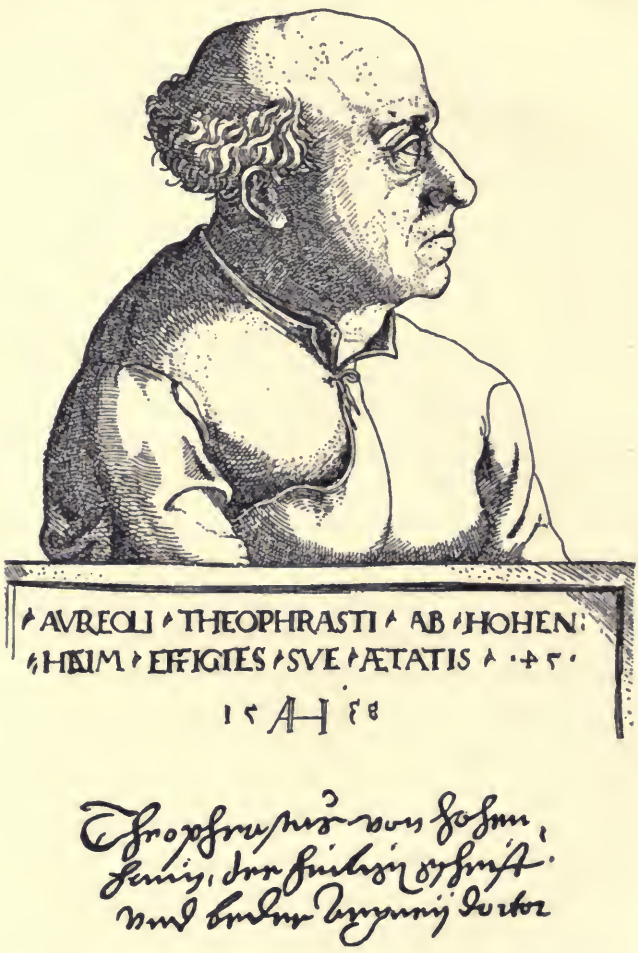
[3] Cf. Hartmann, *op. cit.* The detailed story with some imaginative embellishment may be found in Stoddart's *Life of Paracelsus.*

passed for Paracelsus without one or more changes of residence, and no place could be called his home.

After leaving Basel, he was for a time in Colmar whence he wrote letters—still extant—to his friend B. Amerbach at Basel; later at Esslingen on the Neckar, which place he left after some experiences with a patient and the local physicians who provoked him. Shortly after we find him at Nuremberg endeavoring to publish certain of his works. It appears that these had passed the public censors and permission had been granted for printing, when because of protests emanating from the medical faculty of Leipsic the permission was revoked. There is preserved and printed by Huser in his collection of the writings of Paracelsus, the letter in which the author appeals to the city authorities against this decision. In it he challenges the justice of thus denying him the privilege of publication on the protest of the university faculty. He stands for the truth, he says, and his opponents should be made to prove their claims in open disputation before his publications should be prohibited. This letter bears date of March 1, 1530, and is dated at Beratzhausen. There is no evidence, however, that his appeal was granted consideration.

Interesting evidence as to his presence in Nuremberg in 1529 and of the impression he made upon a contemporary writer, is found in a passage in the *Chronica, Zeytbuch und Geschichtsbibel* of Sebastian Franck:

"Dr. Theophrastus von Hohenheym, a physician



PARACELSUS THREE YEARS BEFORE HIS DEATH.

This portrait and the following one are probably by A. Hirschvogel (c. 1503-1569), engraved after sketches from life. The signature reproduced underneath reads: "Theophrastus von Hohenheim, der Heiligen Schrift und beider Arzneien Doctor."

and astronomer. In the year 1529 the Doctor mentioned came to Nuremberg—a strange and wonderful man, who ridicules nearly all doctors and writers of medicine. He is said to have burned the Avi-

PARACELSUS IN HIS LAST YEAR.

cenna in public in the University; is quite alone in opposition to all medical men in his prescriptions, diagnosis, medical theory, and maintains many dif-

ferences with many of them [*und vil widersinns mit vilen helt*]."

The allusion to Paracelsus as an "astronomer" is justified by his occasional publications of prognostications of political and other events in Europe. This class of publications was very common even at a much later period, and many physicians and "astronomers" issued them.

That these later years of Paracelsus were years of active authorship, we know not only from the mass of his evidently authentic work, but from his occasional struggles, more often unsuccessful than successful, to get his works printed. In a Latin letter of Paracelsus to an unnamed correspondent he himself refers to his continuous labor in writing —taking no time for pleasures. Internal evidence locates the date of this at 1529 or 1530.[4]

From the leaves of a diary of about 1534-35 written in Latin by Joh. Rütiner, a citizen of St. Gallen, where Paracelsus spent some time, we learn that "Theophrastus—is most laborious, sleeps little, —without undressing throws himself, booted and spurred, on the bed for some three hours, and ceaselessly, ceaselessly, writes."[5]

The preface to the third book of the *Paramirum* was dated in St. Gall in 1531. It was here that he is said by Staricius to have dedicated various theological writings to the Abbot of St. Gall.

[4] See Schubert and Sudhoff, *Paracelsusforschungen*, II, p. 53.

[5] *Ibid.*, I, p. 63.

In 1534, he came to Innsbruck in the Austrian Tyrol, in poverty and rags, and where he apparently was refused the privileges of the city. "The burgomaster of Innsbruck has probably seen doctors in silken clothing at the courts of princes, not broiling in the sun in tattered rags," remarks Paracelsus in the Preface to his treatise, "The Pestilence in the City of Stertzingen."[6] From Innsbruck he went to Stertzingen, and thence to Meran in the Tyrol, where he tells us that he obtained honor and good fortune. But apparently not for long, as in 1535 he is the guest of the Abbot Joh. Jakob Russingen at Pfäffers, where he wrote and published a treatise on the mineral springs at that resort, a work often reprinted. In 1536 he is at Ulm and in the same year at Augsburg, in both of which cities editions of his *Greater Surgery* appeared in that year. Thence to Vienna where it appears he again failed to obtain consent to publish certain works and was made to feel the unfriendliness of the medical profession. In 1537 he revisited his boyhood's home Villach where his father had died in 1534, apparently while Paracelsus was absent in Innsbruck or that vicinity. In the same year (1537), as is recorded by Erastus, Paracelsus left in Kromau "a chest of books, a part of which he had brought there with him, a part he had dictated while there."

In 1538, he presented to the authorities of the Archduchy of Carinthia, with the request that they be published, four manuscripts: *Chronicles of the*

[6] *Op. fol.*, I, 356.

Land of Carinthia, The Labyrinth of Errors of the Physicians, Tartaric Diseases and *Defense Against the Slanders of His Enemies.* The authorities accepted these courteously and promised they should be published, though the promise was not fulfilled, and long afterward the manuscripts and the letter of acceptance were acquired by the energetic Huser and published in his collection of 1589-1590.

Augsburg, Munich, Grätz, seem also to have served as resting-places of Paracelsus for brief intervals during his later years, before arriving at his last brief residence at Salzburg.

The years from 1531 to 1534 appear to have been a period of grinding poverty for Paracelsus. Later years were more comfortable or at any rate relieved by periods of more comfortable circumstances. Though the physicians were generally opposed to him, he was called in quite frequently to treat wealthy or distinguished patients in cases where the regular attendant physicians had failed to afford relief. According as he was more or less successful in his treatment his fortunes fluctuated. On the whole it is evident that his popular reputation was considerable even in these later years of disappointment and discouragements. It is recorded, for instance, that in 1537 a dinner was given in his honor by the town of Pressburg at the house of the *Stadtrichter* Blasius Beham.[7]

Taken as a whole, these later years of Paracelsus

[7] Cf. Franz Strunz, *Theophrastus Paracelsus, sein Leben und seine Persönlichkeit*, Leipsic, 1903, p. 73.

may be summarized as a continuous struggle to commit to writing, and so far as possible to print, his new message to philosophy, to medical theory and practice. The volume of work which he succeeded in committing to manuscript was, under the circumstances which limited his accomplishment, indeed remarkable, even eliminating all works of doubtful authenticity.

The recognition he obtained from his works during his own life was not great except for the very considerable popularity of his *Greater Surgery,* though at the time, surgery as an art was held rather in contempt than esteem by the medical doctors, and was largely practised by barbers and others of less scholarly training.

The determined and largely successful efforts of the conservative medical party to prevent the publication of the works of Paracelsus, was in some measure a tribute to their potential influence. That their fears as to the extent of this influence were entirely justified is shown by the great popularity of these books when they finally began to appear in print. This period of active publication of his works began about 1560 and extended for about a hundred years. The last printed collection of his works was the Latin version of 1658, published at Geneva, which in spite of many imperfections met with the widest circulation and is the one best known to the medical world generally.

The great popularity and consequent influence upon the time of the works of Paracelsus is evi-

denced by the bibliography of his printed works compiled by Sudhoff, in which no less than two hundred and fifty are recorded as appearing before 1600. These comprise editions, reprints, translations and collected works. By 1658, the year of the above-mentioned Latin collection, the record of printed publications had reached about three hundred and ninety.

The circulation of the medical works of Paracelsus initiated the fierce contest between the progressive party favoring the use of the so-called chemical remedies and more or less influenced by Paracelsan theories, and the conservative party, holding to the traditional dogmas of the Greek-Arabian authorities, and resisting to the utmost the radical innovations of the followers of Paracelsus.

This is not the place to dwell upon this chapter of the history of medical science. Suffice it to say that gradually the chemical remedies made way against the opposition of medical faculties and the conservative profession. The University of Heidelberg was compelled by a student revolt to eliminate the oath pledging candidates to oppose the use of such remedies, and the University of Paris was forced to cancel similar legislation by opposition among students and members of the medical progressive party. It was during this long and bitter struggle that many of those reports and rumors were initiated that so long discredited the reputation of Paracelsus.

BROADSIDE ON PARACELSUS.

Before 1606. Engraved by Balthasar Jenichen after originals by Hirschvogel.

That with the really progressive influence which his ideas exerted, other less progressive and even reactionary influences were exerted is also true. For many of the more fantastic theories and superstitious notions common to his time and contained in his writings, doubtless received through the weight of his reputation with his followers a new vitality, and his own disregard for the achievements of the ancient Greek physicians was shared in too great a degree by his enthusiastic followers. Later critics of Paracelsus, however, too often appear to credit him with having been the originator of the mystical and supernatural ideas of his writings, rather than considering them as they were—a very full and indeed almost encyclopedic record of the popular supernatural beliefs and of the fashionable neo-Platonic philosophy of his time and people. That he was superstitious is true; that he, on the other hand, often endeavored to bring supernatural ideas, which he with others credited, within the domain of natural cause and effect we have already seen illustrated.

Nevertheless, it is true that in the sixteenth and seventeenth centuries—and we may say also in the nineteenth century—mystics and visionaries have sought for and found inspiration in his works. Paracelsus, endeavoring to present a complete system of the philosophy of nature, naturally includes and attempts to systematize the then accepted facts of nature which were credited by the people to which he belonged. He relates these just as if he were describing any other accepted facts of nature. The

following illustration may serve as an example, though it reads strangely enough when transplanted from the superstitious sixteenth into the clearer intellectual atmosphere of the twentieth century. It is doubtful whether there were many of his day who would have found it absurd.

"For there are real beings who live in all four elements [i. e., Air, Water, Earth, Fire] and who in former times of nature were often considered and worshiped as gods. And it is indeed these against whom Almighty God has warned us in His commandment on the first tablet of Moses: that we shall have no other gods but Him, neither in the water—here He means the nymphs—nor under the earth—here He means the sylphs and pygmies. For He is a jealous God and visits such misdeeds of the fathers upon the children unto the third and fourth generations. And it is not less true that the Venusberg in Italy [*sic*] was peopled by these, for Venus was herself a nymph, and the Venusberg has been compared to her kingdom or paradise. But she has now perished and her kingdom has passed away with her and ceased to exist. For when have we heard anything more of them since those old days when Tannhäuser and others were there. And that is no fable about him but a true story. For those folk are of such a nature that they love all those who love them, and hate those that hate them. Therefore to him who binds or pledges himself to them they give knowledge and riches enough. They

know our minds and thoughts also, so that they may be easily influenced to come to us."[8]

With respect to many such records of current supernatural beliefs it is perhaps not the peculiarity of Paracelsus that he was more credulous than others of his time, but that he was peculiar in having the courage to record and at times even to attempt to explain phenomena which other writers of his day with more purely mystical theories hardly dared to commit to writing for fear of being suspected and punished for the possession of occult connection with the Evil One. And after all, is not the concept of "superstition" purely relative to the knowledge and belief of a particular state of knowledge? For Paracelsus also had his own ideas of superstition—"Can that be a proper condition of man when he knows nothing? No man of knowledge has ever remained misled, nor has he ever been found superstitious. Where are the superstitions? Among those who understand nothing. Where is pride? Only among those who lack foundation. Where is folly? Only with those who persist in their own wisdom and advance no farther into God's wisdom. And so when knowledge is made manifest and it can find no foundation in their empty skulls, they think it must be from the Devil, and sorcery. . . . . For every one should know that all help comes from God, for neither to the Devil nor to any sorcerer is it possible."

While it has been the fortune of many prominent

[8] *Op. fol.*, II, 291, "De occulta philosophia."

names in the history of civilization that their best thoughts have been remembered and their weaknesses and vagaries overlooked, it was the fate of Paracelsus that for centuries his shortcomings were emphasized and exaggerated and his merits minimized. The period of his activity was distinguished by the development of revolutionary ideas, when the spirit of modernism was struggling to free itself from the bondage of medieval scholasticism And the most revolutionary idea was that of independence in questioning and judging authoritative dogmas sanctioned by centuries of acceptance. In this respect Paracelsus was among the greatest of his century. That his method was not that of modern science may be freely admitted, yet he may be credited with some realization of the necessity of such method and of foreseeing as he preached that "*Experientia est Scientia.*"

THE LAST DAYS OF PARACELSUS.

THE restless career of Paracelsus came to its close in the city of Salzburg in Austria. In this his last residence town, his most poverty-stricken days past, it seems that he had found a comparatively quiet and restful harbor. Probably also his health was failing. Though scarcely forty-nine years of age he presented the appearance of a more advanced age if we may judge from his most authenticated portraits—drawings made within two or three years before his death.

His death took place on the twenty-fourth of September, 1541. Current legends, originating, however, long afterward, attributed various causes for his death. It was alleged that he died in a drunken debauch, and it was also said that he had been murdered by assassins at the instigation of professional enemies. Modern researches, however, have shown the groundlessness of these rumors and brought to light positive evidence in contradiction. Investigation of his exhumed remains gives evidence on the basis of expert examination that Paracelsus had suffered from childhood from rickets, which would doubtless account for the early appearance of age.

Evidently his death was not sudden or unanticipated. Three days before the day of his death, he dictated to the public notary his last will and testament. This document has been preserved to us, duly attested by three witnesses and signed by the notary.

It begins in the formal and stately legal phraseology:[1]

"In the name of God, Amen. Let it be made known and manifest to all and every one who may see, read or hear read, this present public instrument, that in this year after the birth of Christ our dear Lord, one thousand five hundred and forty-one, on the day of St. Matthew, the holy Apostle, the twenty-first day of September, at midday, in the seventh year of the reign of the most holy Father and Lord in God, Paul, in God's providence the third pope of that name, in my public notaryship and in the presence of the hereinafter named witnesses especially summoned and besought therefor: there has personally appeared the worthy and very learned Theophrastus von Hochenhaim, Doctor of the Liberal Arts and of Medicine, although weak in body, sitting upon a couch, yet quite sound in reason, mind and spirit. In order that he may not take leave of this world without testament and ordering of his temporal goods, the same Dr. Theophrastus, with plainly comprehensible words, with free will and with right knowledge, under no compulsion from any one, has done and performed his said necessary

[1] From the text of the testament as given by Netzhammer, *op. cit.* Appendix.

business and last wishes thereto pertaining in all measure and form as hereinafter contained:

BUST OF PARACELSUS AT EINSIEDELN.

By Ildephons Kuriger. Early 19th century, after drawings by Hirschvogel and Jenichen. The socle shows Paracelsus's coat of arms.

"First, he commits his life, death and his poor soul to the shield and protection of Almighty God,

in the confident hope that the everlasting mercy of God will not suffer the bitter suffering, martyrdom and death of His only begotten Son our Saviour Jesus Christ to be unfruitful nor lost to him, miserable creature.

"Then, that his burial-place has been selected by the said Doctor at Saint Sebastian's this side of the bridge. There shall be sung in the church, according to ancient usage, the first, seventh and thirtieth [Psalms], and at all three singings a penny is to be given in hand to every poor person before the door."

Then are enumerated various bequests of small sums of money or articles of personal belongings to designated persons or for particular purposes, as for instance his medicines, plasters and professional books to Master Andre Wendl, citizen and barber (therefore also surgeon) of Salzburg. And finally—

"Fifthly, for all other of his goods and belongings he institutes and names as his heirs, the poor, the wretched and the needy people who have no stipend nor other provision." And he directs that in this distribution there shall be shown neither favor nor disfavor but that only the wants and necessities of such poor people shall be considered.

The inventory of his modest possessions attested by the notary and witnesses is very circumstantial, cataloging various small sums of money in gold or silver coins, silver cups or other vessels, articles of clothing and similar personal belongings. It is interesting to notice the presence of a copy of the

Bible, of the New Testament, a concordance of the Bible, the Interpretations of Hieronymus on the Evangelists, one printed and seven manuscript volumes of medical treatises and "various similar collections," also a "collection of several and various manuscripts on theology assumed to have been written by Theophrastus."

That the provisions of his will were faithfully executed we have evidence in the signed and recorded receipt by Peter Wessner, Bishop of Einsiedeln (the birthplace of Paracelsus), for certain items of his property bequeathed to him for administration.

It is a satisfaction to know that Paracelsus in his last days seems to have been to some extent relieved from the distressing poverty and hardships of earlier years, and that though held in slight esteem by professional colleagues he yet found some who held him in estimation. It is also a satisfaction to know that he died accepted by the Church many of whose doctrines and observances he had so severely but so seriously denounced as corruptions, but to whose fundamental faith he yet claimed allegiance.

It is a yet greater satisfaction to know that a mass of confusing and discrediting legends and fictions, which for three centuries have cast undeserved reproach upon the reputation of Paracelsus as a man and physician have been shown by modern research to be groundless, and that there exists nothing that to our present knowledge contradicts the inscription originally engraved upon his tomb

in the cemetery of the Hospital of St. Sebastian in Salzburg, which, translated, reads:

"Here is buried Philippus Theophrastus, distinguished Doctor of Medicine, who with wonderful art cured dire wounds, leprosy, gout, dropsy and other contagious diseases of the body, and who gave to the poor the goods which he obtained and accumulated. In the year of our Lord 1541, the 24th of September, he exchanged life for death."

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